This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: NBER Macroeconomics Annual 1988, Volume 3

Volume Author/Editor: Stanley Fischer, editor

Volume Publisher: MIT Press

Volume ISBN: 0-262-06119-8

Volume URL: http://www.nber.org/books/fisc88-1

Publication Date: 1988

Chapter Title: Perspectives on the Japanese Current Account Surplus

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Chapter URL: http://www.nber.org/chapters/c10955

Chapter pages in book: (p. 217 - 268)

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Perspectives on the Japanese Current Account Surplus

The Japanese trade surplus has been one of the three key reasons for trade imbalances of the last few years. The size of the surplus is now about two thirds of the U.S. trade deficit and exceeds the German surplus by a wide margin. The Japanese bilateral trade surplus against the U.S. is about one third of the U.S. deficit. Despite the sharp appreciation of the yen since 1985, the surplus did not start to decrease until 1987. In this paper we analyze the causes of Japan's recent trade (or current) account surplus and the persistence of the surplus in the face of large corrections in exchange rates. The major focus is on the surplus of the 1980s, which far exceeds earlier surpluses in any conceivable measure. However, attempts are made to place the analysis in a proper long-term perspective to examine the unique problem of the 1980s.

A distinguishing characteristic of the current account surplus of the 1980s is its high correlation with domestic and foreign fiscal variables. Historically, the current account has most corresponded with private investment.[1] Therefore, the analysis of the current account surplus of the 1980s requires an explanation of a correlation between investment and the current account that is weaker than in earlier periods.

In the 1980s, the most popular view of the correlation between fiscal policy and the current account recognizes a causal relationship between the two.[2] Many people have argued, using a version of the Mundell-Fleming model, that the U.S. fiscal expansion and Japanese contraction have created the imbalance by their effects on the exchange rate. The discussion of the paper revolves around this view (the M-F view), noting whether

1. Importance of investment behavior to the explanation of the current account has been stressed by Sachs [1981].
2. See, for example, Ueda [1985].

departures from it are necessary in order to explain actual current account movements.

The M-F view seems to explain the course of the world economy in the 1980s fairly well, with the exception of exchange rate movements since 1985.[3] In fact, no simple model seems to be capable of explaining asset price movements in the 1980s, such as exchange rates and interest rates. We thus focus on the goods market, the current account, investment and savings, taking the movements in assets prices as exogenous. We also work on the assumption that Japan is a small country mainly for reason of tractability. Hence, the paper does not analyze the relationship between U.S. fiscal policy, exchange rates and U.S. economic expansion. In most cases a relationship is assumed.

The approach of the paper is agnostic more than testing of the M-F view or alternative models. We try to identify the major causes of fluctuations of the current account and saving-investment balances, both by estimating simple behavioral equations and by more casually inspecting data.

A major departure from the M-F view is the Ricardian view of the effects of fiscal policy. Under this view, fiscal policy exerts a minor effect on the current account. Although tests of the neutrality theorem using macro data are bound to be inconclusive, we argue that the Ricardian view is inconsistent with movements in Japanese macroeconomic variables.

A more useful neoclassical approach to the current account might be one which emphasizes the effects of prospective income and productivity changes on savings and investment. A prospective decline in productivity and income may decrease investment more than savings and create a current account surplus. A major possible cause of decreases in productivity and income in the 1970s is the rise in oil prices. We, therefore, examine the relationship between investment, savings and the current account. We find only very weak evidence of the relationship for the 1980s. Consequently, we conclude that this perspective, would be somewhat useful for understanding long run movements in Japanese savings and investment, but not the increase in the current account surplus in the 1980s. This part of the paper, in a sense, addresses the question of why the correlation between the current account and private investment was weak in the 1980s.

The M-F model attributes powerful effects of asset prices on trade flows and saving-investment balances. A domestic fiscal contraction improves current account mainly through exchange rate depreciation. A foreign fiscal expansion increases net savings (savings minus investment) by raising interest rates. A simple econometric analysis of the Japanese goods

3. See, for example, Sachs & Roubini [1987].

market suggests that the effects of asset prices are, though not nil, fairly small. This suggests that the traditional Keynesian income-expenditure mechanism should not be disgarded at least within a time span of a few years.

The small exchange rate effects on the current account and the importance of the conventional income-expenditure mechanism calls for some qualifications of the popular M-F view of the Japanese current account surplus. First, the major shocks to the Japanese goods market that have generated the surplus are the high growth of U.S. expenditures and the decline in oil prices. Second, the decreases in Japanese government expenditures are also important, but not to the extent suggested by the decline in the Japanese budget deficit. The deficit was, to a significant extent, a response to the U.S. economic expansion and oil prices decreases, as unexpectedly high income growth increased tax collections and/or decreased the share of government expenditures in GNP. Third, a large reduction in the surplus requires a major correction of the relative growth rates of U.S. and Japanese expenditures. Without this, exchange rates would have to change by considerable amounts, which is what we actually saw in 1985 and 1986.

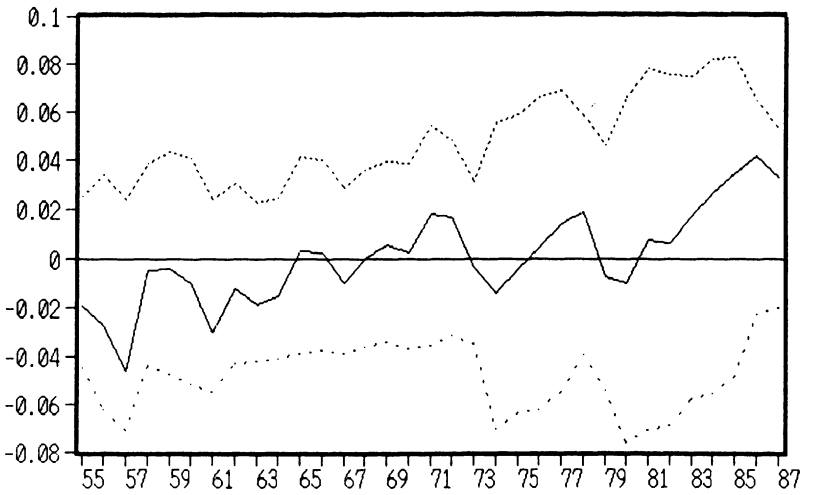
This paper is organized as follows: In section 1, we provide an overview of the Japanese current account. In section 2, we survey various approaches to the Japanese current account, especially its behavior in the 1980s. In section 3, we estimate export and import equations on the one hand, and saving and investment equations on the other. The estimation results are used to clarify the causes of the current account surplus. Section 4 offers some further remarks on the current account. Section 5 summarizes the conclusions of the analysis.

1. An Overview

1.1 EXPORTS AND IMPORTS

Figure 1 shows movements in the trade balance (which is approximately the same as the current account for Japan), (the negative of) oil imports, and the non-oil trade balance for the last three decades, all relative to GNP. We point out three important characteristics of the trade balance: first, in the 1950s and the early 1960s, the balance was mostly in deficit; second, it began to improve in the mid-1960s, leading to a large surplus in the early 1970s (the oil price increase in 1973–74 moved the trade balance into deficit for a brief period. But a large surplus reappeared in 1977–78, and was once more reversed by the oil price increase in 1979–80); third, large and persistent surpluses emerged in the 1980s, exceeding those of the 1970s by a wide margin.

Figure 1 OIL IMPORTS, NON-OIL & OVERALL TRADE BALANCE



——trade balance ····· non-oil balance · · · oil imports

We find that for the 1950s and 1960s, movements in the trade balance are mostly explained by those in the non-oil balance, while in the 1970s and 1980s, it correlates increasingly with oil imports. The trade balance in the 1970s and 1980s has been most affected by changes in oil imports.

For the last two decades there has been a strong correlation between the overall trade balance and non-oil balance, suggesting the importance of exports. There has been a clear upward trend in the non-oil balance for the last two decades, matching the upward trend in the overall balance.

About two-thirds of the increase in total exports between 1980 and 1986 can be explained by the specific increase in exports to the U.S. This certainly forces us to examine U.S. variables in order to understand the surge in exports. Figure 2 looks at the correlation between the real exchange rate, the U.S.-Japan expenditure growth differentials, and the non-oil trade balance. The real exchange rate here is the U.S. producers price index of manufactured goods relative to Japanese export price. Despite the recent sharp yen appreciation, the real exchange rate is just back at the level it was in 1980, and is still far above the 1973 or 1978 levels.[4] This reflects the high growth of productivity in the Japanese manufacturing

4. The fact that the real exchange rate is now back at the 1980 level, while the trade balance is not, suggests that factors other than exchange rate movements may have been the major cause of the increase in the surplus in the 1980s.

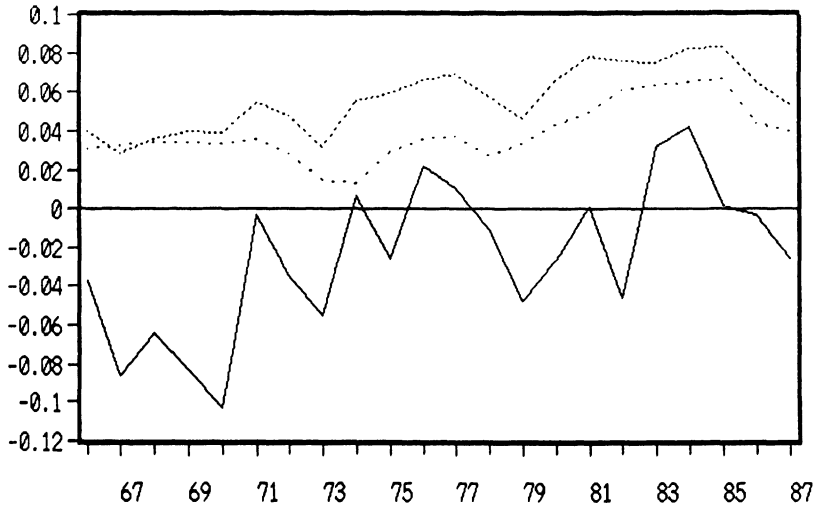
sector relative to its U.S. competition. Both the exchange rate and the growth differential exhibit positive correlation with the trade balance, as expected. The distinctive feature of the 1980s is not only the sharp depreciation of the yen, but the fact that the U.S. expenditure growth exceeded Japanese expenditure growth, especially in 1983 and 1984—something very unusual between the two countries during the last two decades.

1.2 SAVINGS AND INVESTMENT

We turn now to the gap between income and expenditure (savings and investment). Figure 3 shows the excess of private savings over investment, the surplus of the general government budget, and the current account.

The pattern of correlation has changed over the last three decades. Until the late 1970s, the current account exhibited strong positive correlation with the saving-investment balance of the private sector. On the other hand, the government budget surplus was negatively correlated with both the current account and the excess of private savings over investment. In contrast, increases in the current account surplus in the 1980s are mirrored by sharp reductions in government budget deficits—usually the basis for the M-F view of the current account. The gap between private savings and investment increased slightly in the early 1980s, but the increase is small compared with the improvement in the current account.

Figure 2 NON-OIL TRADE BALANCE, REAL EXCHANGE RATE & U.S.-JAPAN GROWTH DIFF.

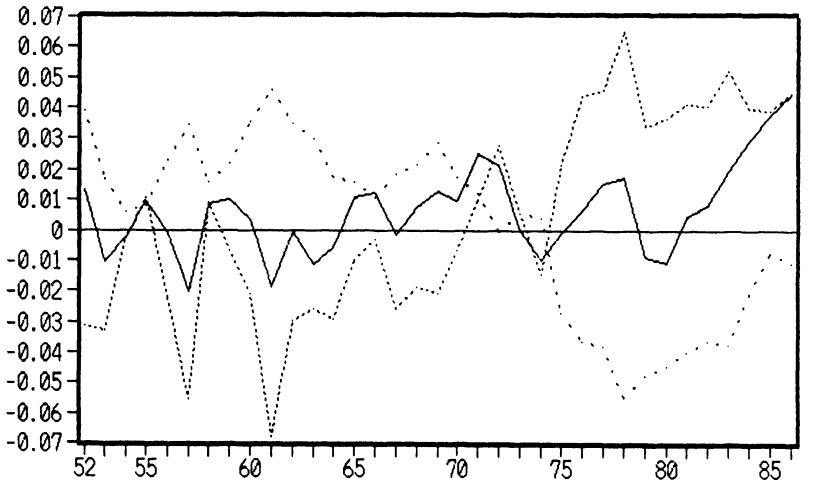


——exp. growth U.S.-J ····· non-oil balance · · · real exchange rate

A closer look at the behavior of private savings and investment (relative to GNP) in Figure 4 reveals the following: first, in both the short run and long run investment is more volatile than savings. Therefore, fluctuations in investment are the major cause of fluctuations in the excess of private savings over investment, and in many cases the current account. Second, looking more carefully at investment and savings behavior in each decade we find that in the 1950s and early 1960s the excess of savings over investment was mostly negative because of the strong performance of investment. The gap started to increase in the late 1960s due to a rise in savings, which outpaced investment. Both savings and investment peaked in 1970. Since then, the declines in investment have been much larger than those in savings, explaining the emergence of large gaps between savings and investment. We may note that this result accords with the predictions of the stages-of-the-balance-of-payments theory. (Crowther [1957], Fischer & Frenkel [1974].)

In the 1970s, such a large decline in investment relative to savings would have created a large current account surplus. With the exception of 1977–78, this did not happen for two reasons. First, there were two large oil price increases in the 1970s. Second, large government deficits emerged in the late 1970s, partially offsetting the gap between private savings over investment. In the 1980s the excess of private savings over investment did not change much, while the government deficit decreased sharply. This

Figure 3 CURRENT ACCOUNT, BUDGET SURPLUS & PRIVATE NET SAVINGS



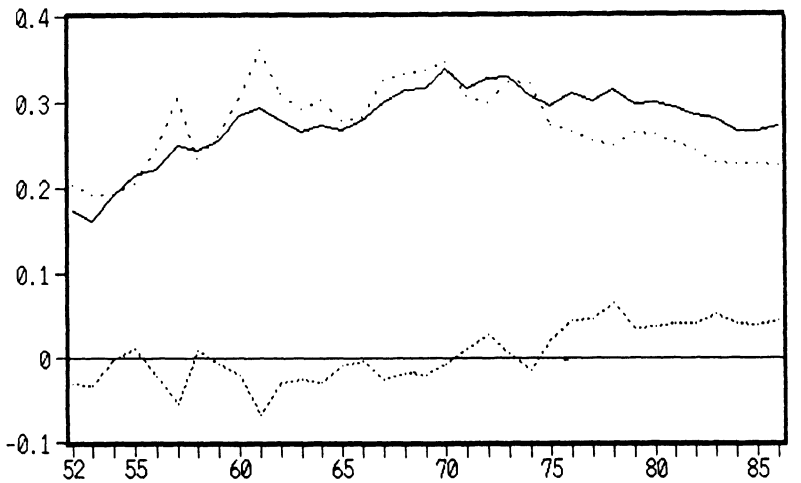
——current account ····· private net savings · · · budget surplus.

suggests a two-way interpretation of the current account surplus in the 1980s. Relative to the *late* 1970s, the surplus is most clearly associated with the decrease in the government budget deficit. However, relative to the *early* 1970s, the sharp decrease in investment (and a slower decrease in savings) seems most significant. This paper is mainly concerned with the first of these two interpretations, but the significance of the second should not be overlooked.

We show in Table 1 the behavior of components of domestic demand for the last decade. The table reveals that among the components of aggregate demand, housing investment and government expenditures decreased sharply in the 1980s, with private consumption and investment staying mostly at the levels they were in the late 1970s. Comparison of the behavior of demand components with those of net savings indicates that there were large increases in taxes in the 1980s, resulting in a much larger reduction in government deficits than suggested by government spending movements. Net private savings did not change much because the slowdown in housing investment was partially offset by a decline in savings.

To summarize, in terms of exports-imports, the current account has been affected by shocks to both exports and imports. Since 1974, however, the significance of oil imports has increased considerably. In terms of income-expenditure, net savings have corresponded most with private fixed investment, except in the 1980s when they have been most affected by government expenditures or deficits.

Figure 4 PRIVATE SAVINGS, INVESTMENT AND NET SAVINGS



——private savings ····· private net savings · · · private investment

Such an overview suggests that several key empirical questions should be addressed in the study of the Japanese current account behavior in the 1980s. First, does the correlation between fiscal policy variables and the current account suggest that the former causes the latter? If it does, what is the underlying mechanism that has created the correlation? Second, as this must be related to the behavior of exports and imports, what is the relationship between oil imports and budget deficits? How and to what extent have the expansion of the U.S. economy and exchange rate movements affected the Japanese current account, savings and investment?

2. *Perspectives on the Current Account*

Let us now turn to a discussion of possible theoretical explanations of recent movements in the Japanese current account, especially in relation to the budget deficit in the 1980s. Before carrying out a detailed analysis of the M-F view, we offer a brief review of neoclassical perspectives which tend to undermine the importance of fiscal policy variables.

2.1 NEOCLASSICAL PERSPECTIVES

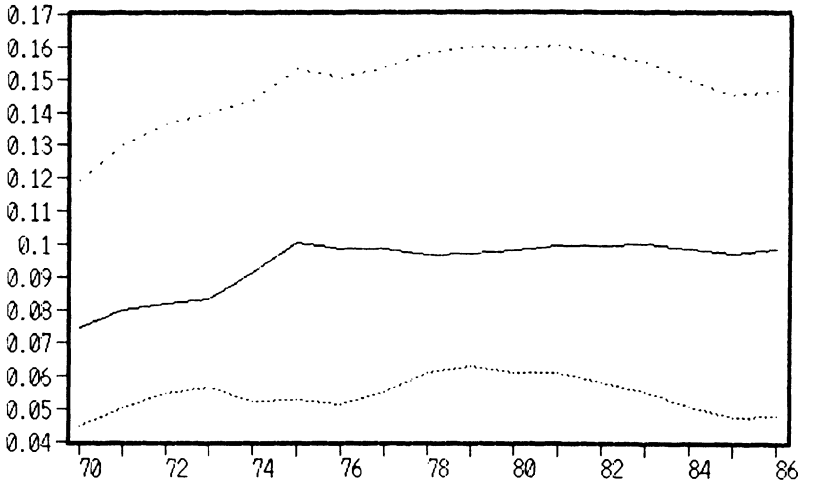
2.1.1. Fiscal Policy and the Current Account In a neoclassical model in which agents' time horizon is infinite and the government budget constraint is

Table 1 MOVEMENTS IN THE COMPONENTS OF AGGREGATE DEMAND

	S−I						
FY	Private	Government	*C*	*If*	*Ih*	*G*	*NX*
76–80 average	4.3	−4.1	58.1	17.9	7.2	15.7	0.4
81	3.9	−3.7	58.4	19.3	6.0	16.0	0.5
82	3.4	−3.4	59.5	17.7	5.9	15.7	0.8
83	5.3	−3.0	59.7	17.4	5.2	15.4	2.0
84	3.9	−1.8	58.7	17.8	5.0	14.8	3.0
85	4.2	−0.8	58.0	18.0	4.9	14.5	3.8
86	4.9	−0.5	57.7	17.7	5.0	14.6	4.6
87	n.a.	n.a.	57.6	18.0	5.9	14.6	3.8

Notes: 1. *S−I*: net savings (savings minus investment).
C: private consumption.
If: private fixed investment.
Ih: private housing investment.
G: government expenditures on goods and services.
NX: current account.
2. All numbers are relative to GNP.
3. Components of demand do not add up to 100 because inventory investment is ignored.
4. Numbers for 1987 are for calendar year.

Figure 5 CONSUMPTION & INVESTMENT OF THE GENERAL GOVERNMENT



——gov. con./gnp ····· gov. inv./gnp · · · gov. con. + inv./gnp

internalized by the private sector, some strong conclusions emerge about the effects of fiscal policy on the current account. That is, given the path of government spending, changes in taxes will have no impact on the current account because they are offset by changes in private savings. Permanent changes in government spending will be offset by private consumption and leave the current account unaffected. Only temporary changes in government spending will create current account movements.[5]

Looking at the components of government spending in Figure 5, we find that there was a permanent increase of about 2 percentage points relative to GNP in government consumption in the mid-1970s, and a temporary increase (about 1 to 1½ percentage points) in investment in 1978–80. By 1984 government investment was back at the level it was in the mid-1970s.

Assuming that all these movements were foreseen by the private sector, we see that the only significant fiscal policy movement that might have affected the current account under the Ricardian view is the temporary increase in government investment in 1978 and 1979. This would have created a worsening of the current account during the same period and

5. Ahmed [1987] has shown that both permanent and temporary government spending may affect the trade balance in a two-country model with endogenous real interest rates and the terms of trade. However, his results still imply that the effects of permanent changes in government spending on the current account are much smaller than those of temporary changes.

then an improvement in the early to mid-1980s, with the size of the change in the current account falling short of the changes in government investment.[6]

Such a pattern is consistent with the behavior of the current account, which worsened in 1979 and then turned around. But the observed swing in the current account is "too" large; in 1979 the current account worsened by about 2½ percent and the improvement toward 1985 is about 5 percent (of GNP). Consequently, we may conclude that, on the Ricardian view, fiscal policy was not a major cause of the current account surplus in the 1980s.[7]

2.1.2 Prospective Income Changes and the Current Account Prospective changes in future incomes are generated not only by fiscal policy movements, but also by a variety of shocks, such as improvements in productivity or large changes in factor prices. A prospective income increase will stimulate consumption today and lead to a current account deficit. If the income increase is accompanied by an upward revision of the rate of profit, this will stimulate investment, as well, and would create an even larger current account deficit.

Table 2 presents the results of a survey on expectations of future income growth that was carried out by the Japanese Economic Planning Agency. The survey asks executives of major corporations what their expectations of the average growth rate of real GNP are for the next three years. The table shows that expectations of GNP growth have declined steadily over the last two decades; they decreased sharply in 1974–75, then stayed in the 5.0–6.0 percent range for the rest of the 1970s and the early 1980s, until settling down to the 3.5–4.5 percent range for the 1982–86 period.

Do such movements in the expectations of future incomes conform to the long-run behavior of savings and investment, as surveyed in the last section? The private investment series depicted in Figure 4 exhibits a sharp decrease (relative to GNP) in the mid 1970s and a small decrease in the early 1980s, which coincides with the timing of the downturns in the expectations of income growth. However, the decrease in investment in the early 1980s is mostly a result of a slowdown in housing investment. It is not clear to what extent this can be explained by changes in the expectation of future incomes.

An expectation of a permanent decrease in the growth rate of income

6. This is because changes in government spending are partially offset by changes in private consumption.
7. The large U.S. government deficits in the 1980s have mainly resulted from decreases in taxes. According to the Ricardian view, this should not have had important current account consequences. See Poterba and Summers [1987].

Table 2 EXPECTATIONS OF GNP GROWTH

Time of Survey	*Average of Answer*	*Actual*
1966.10	10.7	11.1
1974.3	6.4	2.0
1975.1	5.3	4.3
1976.1	5.4	5.1
1977.1	6.0	5.3
1978.2	5.8	4.9
1979.1	5.5	4.4
1980.1	5.1	3.7
1981.1	5.2	3.3
1982.1	4.5	3.8
1983.1	3.7	4.3
1984.1	4.3	4.1
1985.1	4.5	3.8
1986.2	3.8	...

Notes: 1. The survey is carried out by the EPA.
2. The actual means the average of ex-post three-year growth rates, including the year of survey.

leads to an increase in savings out of current income in the short-run. This is because consumption declines as a result of a decrease in permanent income. According to this explanation, the savings rate would have increased in the mid-1970s and early-1980s. Figure 6 presents a few measures of national savings rates. None of them show a sharp increase in the mid-1970s, contradicting the prediction. There is some upward movement in the savings rates in the mid-1980s. But this fails to coincide with the timing of the downturn in expectations of future incomes. Other determinants of savings in neoclassical models include the interest rate and the stock of wealth. Ex-post real interest rates on major saving instruments have shown no sign of a steady decrease for the last decade and a half, with the exception of a sharp, but brief decrease in 1974 due to a large surge in the rate of inflation that followed the first oil shock.

Stock of wealth held by households has actually increased steadily over time. The sum of financial and non-financial wealth relative to trend GNP was 2.4 in 1970, 2.9 in 1975, and 3.5 in 1980. This may explain the downward trend of saving rates.[8] However, Sato [1986] has shown, using household survey data on savings, that savings rates are much more

8. Hayashi [1986] suggests the importance of this factor in the analysis of the Japanese savings rate.

Figure 6 ALTERNATIVE SAVING RATES

——national savings ····· priv. sav. + gov bus · · · priv. saving rate

strongly correlated with the desired stock of wealth, than with the initial stock of wealth. Clearly, more research needs to be carried out before we can pin down the relationship between savings and wealth.

We may note that the failure to find a major factor which might have created sharp decreases in saving rates in the mid-1970s means we must reject the Ricardian neutrality theorem. The Japanese budget deficit increased sharply in the mid-to-late 1970s because of a rise in spending and a decrease in tax revenue. With the exception of the temporary increase in government investment, this would have increased, rather than decreased, private savings rates.[9]

In sum, such a perspective fails to adequately explain the behavior of savings and investment, especially savings. Also, its applicability and usefulness for the 1980s are limited.[10] Finally, expectations of future incomes are endogenous variables themselves, requiring explanation.

9. Estimation of the consumption function (to be carried out later) also rejects the neutrality theorem. See footnote 31.
10. One might argue that in the 1980s an expectation of a rise in future productivity in the U.S. increased investment and decreased savings in the U.S., while exerting the opposite effects abroad. However, no major surge in U.S. productivity has yet been observed. See also Poterba & Summers, *op. cit.*, for a critical discussion of such a view.

Among others, movements in oil prices seem to be one of the most important factors behind prospective change in future incomes. Thus, in the next section we reexamine the neoclassical perspective, focusing on the relationship between oil prices, savings and investment.

2.1.3 Oil Prices, Savings and Investment The effect of oil price changes on savings and investment might be interpreted in the following way: a rise in oil prices acts like a decline in productivity, and decreases investment and the growth rate of income, while increasing savings. However, in the short-run, people may regard the increase in oil prices as temporary and hence respond to it by decreasing the savings rate.[11]

Such a view helps to explain why the savings rate did not increase along with the increase in oil prices in the 1970s. At the same time, however, it presents a number of difficulties. First, the survey data in Table 2 shows that the changes in the economic growth rate in the 1970s were largely considered to be permanent. In particular, it would be difficult to argue that the second increase in oil prices was regarded at that time as transitory, given that labor accepted a decrease in real wages for fear of increasing unemployment.[12]

Second, there does not seem to be an established view on the relationship between oil prices, productivity and investment. For example, given appropriate separability assumptions among factors of production, the effects of oil prices on investment—including the distinction between permanent and temporary changes—should be captured by estimating a Tobin's q type investment function. However, the performance of such an equation is notoriously bad.[13]

Bruno [1984] provides evidence in support of the idea that oil prices exert strong effects on productivity: he shows that factor price frontiers were shifted by the oil price changes in the 1970s. Table 3 is an attempt to extend this analysis to include data from the 1980s. In the table, the profit rates of the manufacturing sector and the total private sector are explained by the real wage rate, a linear time trend, and real oil prices where a one-year lag

11. As Sachs [1981] has shown, a permanent increase in oil prices decreases both income and consumption, exerting only a small impact on the current account. To the extent that investment declines in response to a permanent rise in oil prices, the current account may improve. (Investment may increase under putty-clay technology. See, for example, van Wijnbergen [1984].) A temporary increase in oil prices creates small impacts on consumption and investment, and therefore leads to a worsening of the current account.
12. See, for example, Shinkai [1981].
13. Hayashi [1986] presents an estimate of Tobin's q type investment function for the Japanese manufacturing sector. The constructed q series is much too high compared with the level of investment in the mid- to late-1970s.

Table 3 FACTOR PRICE FRONTIER 1967–1987

	(1) Manuf.	(2) All Non-financial	(3) Manuf.	(4) All Non-financial	(5) Manuf.	(6) All Non-financial
w/p	−1.02	−0.586	−1.15	−0.57	−0.997	−0.449
	(−2.83)	(−1.83)	(−3.43)	(−2.04)	(−3.49)	(−1.85)
$(po/p)(-1)$	−0.337	−0.222	−0.182	−0.116	−0.205	−0.13
	(−1.94)	(−2.28)	(−1.04)	(−1.23)	(−1.39)	(−1.61)
t	0.0237	0.00457	0.0784	0.0398	0.0453	0.0208
	(1.05)	(.307)	(2.36)	(2.10)	(1.49)	(1.18)
$t \cdot$ D74			−0.0421	−0.0304	−0.0224	−0.0197
			(−2.11)	(−2.53)	(−1.23)	(−1.79)
$y/\bar{y}$					6.07	3.6
					(2.76)	(2.65)
$\bar{R}^2$	0.75	0.714	0.792	0.783	0.853	0.843
D.W.	1.61	1.54	1.69	1.62	1.41	1.27
S.E.	0.177	0.113	0.162	0.0984	0.136	0.0839

Notes: 1. Dependent variables are operating profits (obtained from MOF) divided by the real capital stock at beginning of period (obtained from EPA) times the WPI of investment goods.
2. The notations are p: the GNP deflator (equations 2, 4, 6) and the WPI of manufactured goods (1, 3, 5) w: nominal wage index for manuf. and all non-financial corporations, PO: unit value of raw materials and fuels imports, $D74$: dummy taking one after 1974, $y/\bar{y}$ is real GNP over trend real GNP.
3. T-statistics are shown in parentheses.

is introduced for the oil price variable to allow for a lag in the adjustment of inputs to oil price changes.[14]

Equations (1) and (2) are close to the Bruno result except that the coefficient on the time trend is insignificant. However, most of the explanatory power of the oil price variable comes from the 1974–75 experience. Once a dummy is included in the time trend to allow for an exogenous slowdown in the rate of productivity growth after 1974, equations (3)–(6), the oil price variable turns insignificant.

So, the case for relating the Japanese productivity slowdown to oil prices is rather weak. At least, there seems to be no solid evidence that there existed a relationship between oil prices and profits rates for the post-1975 period.

The finding of no relationship may be due to a problem with the data and/or statistical methods used here. For example, it is rather puzzling that the rise in oil prices in 1979–80 appears to have had no significant effects on profits. One possible explanation could be that because of lags in adjust-

14. Without the lag, the results are even less favorable to the presence of the effects of oil prices on the profit rates.

ment, investment did not respond immediately to the rise in oil prices; only as the adjustment period was approaching its end were oil prices starting to decline. Therefore, no major effects on investment were observed. This also explains why investment did not increase in response to the decrease in oil prices in the early to mid-1980s.[15] Also, given the large temporary movement in oil prices from the late 1970s to mid-1980s, people may be responding very slowly to the sharp fall in oil prices in 1986. Such a possibility, however, cannot be examined until more observations become available.

In any case, we shall proceed on the assumption that investment was not much affected by oil prices in the 1980s, but that it might have been in the mid-1970s, and that it may well be again in the near future.

To summarize, although they provide useful insights into some of the individual episodes, neoclassical perspectives fail to give a coherent explanation of the behavior of savings and investment.

2.2 MORE TRADITIONAL PERSPECTIVES ON SAVING-INVESTMENT MOVEMENTS

We now move to the examination of saving-investment movements in more traditional Mundell-Fleming type macro framework, where the emphasis is on the effects of fiscal policy. Ueda [1985], Masson & Knight [1987] both employ a two, or multi-country, full-employment models in which real interest rates and exchange rates clear the goods markets. They also study the extent to which fiscal policy movements in the U.S. and Japan can explain current account behavior. They both find that consumer behavior is pretty far removed from the Ricardian world and that fiscal policy movements exert dominant effects on current accounts. Sachs and Roubini [1987] reach a similar conclusion using a global macroeconomic simulation model, which is closer to the original M-F model.

The essence of the models may be simply stated in the following way: Consider a two country world in which domestic and foreign assets are perfect substitutes, capital mobility is perfect and Ricardian equivalence does not hold. The equilibrium conditions of such a world are:

$$y - E(y, e, r, Z_1) = NX(e, y, y^*, Z_2) \quad \text{(i)}$$

$$y^* - E^*(y^*, e, r^*, Z_1^*) = -NX(e, y, y^*, Z_2)/e \quad \text{(ii)}$$

$$r = r^*, \quad \text{(iii)}$$

15. Assumption of adjustment lags would necessitate an explanation of the sharp slowdown in investment in the early 1970s, which did not exclusively rely on the rise in oil prices. For example, Yoshikawa and Ohtake [1987] argue that the major cause of the slowdown in Japanese economic growth was a decrease in the flow of population from rural to urban areas, which decreased the demand for the output of construction-related industries.

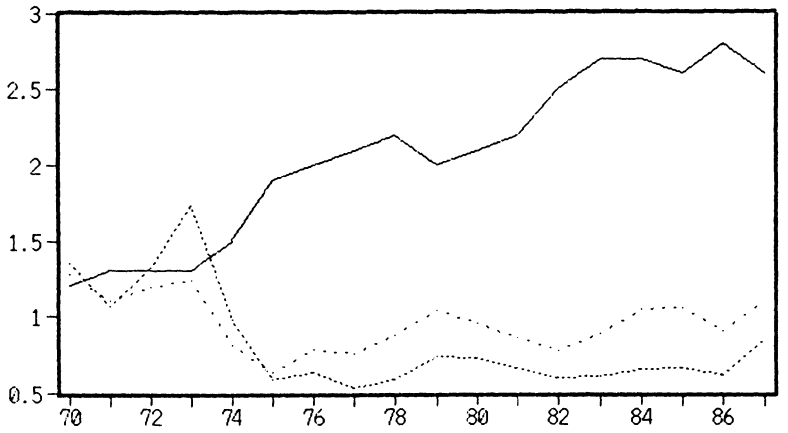
where y is real income, E is domestic absorption, e is the real exchange rate, r is the real interest rate, Z_1 are exogenous variables affecting E, NX is the current account, Z_2 are exogenous variables affecting NX, and foreign variables are denoted with a star. Under a classical formulation (Ueda [1985] and Masson & Knight [1987]) y and y^* are assumed equal to their full employment values. Then, the goods market is equilibrated by movements in e and r. If, in addition, the terms of trade effect on spendings are absent ($E_e = E_e^* = 0$), we obtain the strong conclusion that Z_2 will not affect the current account. The current account is determined entirely by movements in $Z1$ and Z_1^*.

The empirical procedure followed in these works (Ueda and Masson & Knight) involves the estimation of E and E^* functions and full-employment values of y and y^* in order to find out exogenous movements in net savings. Ueda reaches the conclusion that most of the increase in the Japanese current account surplus between 1980 and 1984 is structural, i.e. that it corresponds to movements along the equilibrium of the above model, and that about two thirds of it can be explained by the behavior of fiscal policy in Japan and the U.S., with each contributing about the same magnitude. We note that most of this literature assumes that the reduction in the Japanese budget deficit in the 1980s is for the full-employment deficit.

This earlier work is important because it points out the role of fiscal policy variables in explaining current account movements. However, there are some empirical and conceptual problems with these analyses. First, it seems very difficult to obtain a good estimate of full-employment GNP, and hence full-employment budget deficits. In most cases, the full-employment, or potential GNP series used, is not more than a moving average of the actual GNP series. In Figure 7, we depict the behavior of the unemployment rate, the capacity utilization ratio in manufacturing, and the ratio of job offers to applicants in Japan in order to examine the degree of cyclical fluctuations of the economy in the 1980s. The two labor market variables show that the Japanese labor market was far from full-employment in the 1980s. The capacity utilization rate is slightly better, but its movements seem somewhat biased because of high export performance in the 1980s. In any case, the figure suggests that we should pay more attention to short-run, Keynesian-type considerations.

Second, in much of this work the mechanism by which fiscal policy affects the current account is not carefully analyzed. Going back to the model (i)–(iii), we note that a domestic fiscal expansion creates a worsening of the current account through its effect on the exchange rate. A foreign fiscal expansion improves the current account through exchange rate depreciation and through the increases in domestic net savings because of

Figure 7 UNEMPLOYMENT RATE, JOB OFFER-APPLICANT RATIO & CAPACITY UTILIZATION RATE



——unemployment rate ····· job offer/applicant · · · cap. util. rate

higher interest rates. Consequently, the presence of strong effects of exchange rates on trade flows and of interest rate effects on net savings are crucial in the full-employment version of the model.[16] However, this assumption is either not checked at all (Ueda), or assumed to begin with (Sachs-Roubini).[17]

Third, despite the strong correlation between oil imports and the current account in Japan, this work pays very little attention to the effects of oil prices.

Fourth, the mechanism by which the Japanese budget deficits were reduced in the 1980s is not carefully analyzed in these papers. As we saw in Table 1, reductions in the deficits came more from increased taxes than from declines in expenditures. Yet, there were no major attempts to increase taxes during this period.[18]

These points will be addressed in the following study of the Japanese current account surplus in the 1980s.

16. Under a Keynesian interpretation of equations (i) and (ii), y and y^* are endogenous and the usual income-expenditure mechanism works to equilibrate the goods markets.
17. The Masson-Knight paper estimates some of the parameters, but assumes that the parameters are the same across countries. Therefore, it is not clear to what extent their estimates are good representations of the working of individual countries.
18. The Ueda paper does estimate a full-employment budget deficit series, but suffers from a rather mechanical choice of the full-employment GNP series. The Sachs-Roubini paper does have a tax function in the model, but it does not use the function to analyze the causes of the decrease in the Japanese budget deficits.

3. *Econometric Analysis of the Japanese Current Account*

3.1. THE ELASTICITIES APPROACH

3.1.1 Trade Flow Equations We first estimate export and import equations in a traditional form in order to assess quantitatively the effects of income, exchange rates and other prices on the trade balance. No attempts are made to look for "best possible" specifications. Export and import volumes are related to expenditures (of the purchaser) and relative prices. Annual data are used to minimize the number of lags in the equations. (However, the results from using quarterly data were not much different from those presented here.)

Table 4 shows export price and volume equations. Exports are disaggregated by region—the U.S., South East Asia, and Europe—for the purpose of paying attention to the special importance of goods exported to the U.S. in the 1980s. Expenditure and price variables are a weighted average of

Table 4 EXPORT EQUATIONS 1970–1987

	Dependent variable			
	Quantity of exports			
Independent variable and summary statistic	U.S.	South East Asia	Europe	*Export price*
Foreign real expenditure	3.04	0.952	4.01	· · ·
	(21.3)	(22.4)	(15.7)	
Real exchange rate sum	1.17	0.798	0.448	0.389
Lags: 0	0.696	0.798		0.389
	(4.58)	(4.12)		(6.00)
1	0.461		0.448	
	(2.58)		(1.88)	
Unit Labor Cost				0.72
				(13.3)
R^2	0.99	0.979	0.972	0.948
S.E.	0.569	0.0642	0.0731	0.0446
D.W.	2.66	1.44	0.78	1.65

Notes: 1. *T*-statistics are shown in parentheses.

2. Variables for the volume equations are: export volume: nominal value of exports divided by Japanese export price index (Bank of Japan) real expenditure: $C+I+G$ for the U.S., weighted average of GDP of Germany, France, and the U.K., with the weights reflecting the share in Japanese exports, and real GDP of Korea for South East Asia, real exchange rate: *p.p.I.* for manufactured goods relative to Japanese export price for the U.S., Korean unit value of exports relative to Japanese export price for South East Asia, and a weighted average of German, French and the U.K. export unit values relative to Japanese export price.

3. The dependent variable in the price equation is export price divided by the GNP deflator. The real exchange rate is the same as the volume equation for the U.S.

Table 5 IMPORT VOLUME EQUATIONS 1970–1987

	Elasticity		
	Foods	Raw Materials and Fuels	Manufactured Goods
Japanese real expenditure	1.33	0.673	1.98
	(19.2)	(8.11)	(8.82)
Real exchange rate sum	−0.137	−0.425	−0.479
Lags: 0	−0.137	0.0236	−0.479
	(−2.18)	(0.716)	(−1.8)
1		−0.115	
		(−3.18)	
2		−0.931	
		(−4.93)	
3		−0.338	
		(−1.12)	
4		−0.124	
		(−0.589)	
5		−0.551	
		(−1.43)	
6		−0.139	
		(−3.2)	
R^2	0.977	0.837	0.965
S.E.	0.041	0.0303	0.0835
D.W.	1.08	2.27	1.6

Notes: 1. *T*-statistics are shown in parentheses.
2. Japanese real expenditure is real consumption plus investment plus government expenditures.
3. Real exchange rates are the unit value of imports relative to WPI of domestic goods for foods and manufactured goods equation, and relative to the GNP deflator for the raw materials and fuels equation.

those of Germany, France, and the U.K. for Europe and Korea for South East Asia. In 1985, the share of these three regions in receiving Japanese exports was 70.4 percent.

Export price is assumed to respond to the competitor's price (represented by the U.S.) and unit labor cost. In the equation, both export price and unit labor cost are measured relative to the economy average in order to take account of the faster productivity growth in tradables than in non-tradables.[19] The prices of imported intermediate goods were also tried as an independent variable, but turned out to be insignificant.

Estimates of import volume equations are presented in Table 5. Imports are disaggregated into foods, manufactured goods and intermediate

19. See, for example, Marston [1986] for the importance of this effect.

Table 6 ESTIMATES OF LONG-RUN INCOME AND PRICE ELASTICITIES OF JAPANESE TRADE

	Income		*Price*	
	Exports	Imports	Exports	Imports
This study	2.68	1.04	0.92	0.41
	(1.87)		(1.19)	
EPA	1.56	1.18	1.38	0.32
MCM	2.0	1	1.4	0.5
OECD	1.1	1.18	1.28	0.66

Notes: 1. Numbers in parentheses use the export volume equation reported in f.n. 21.
2. Estimates of the EPA, MCM and OECD models are taken from Amano [1988].

goods.[20] (The shares of these in 1985 were 25.4 percent, 41.6 percent, and 33.0 percent, respectively.) The income elasticity, on average, is almost one, but falls far short of the income elasticities of exports. The price elasticities are also estimated to be much lower than those for exports.

There is a substantial lag in the effects of prices on intermediate goods imports. This creates a J-curve effect, given the large share of intermediate goods imports. The simple sum of export and import price elasticities is .69 in the first year, violating the Marshall-Lerner condition. Even the sum of long run elasticities is fairly small and not far above unity.

It would be appropriate to compare our estimates with those of other studies. Table 6 presents the estimates of price and income elasticities of three large macro models compared with ours. The income elasticity of exports in our model is much higher with price elasticity lower. The high income elasticity in the export equation suggests the possibility that the income variable is proxying for the effects of other variables. In fact, when the consumption of consumer durables and investment in equipments replaces the domestic expenditure variable in the equation for exports to the U.S., the income elasticity declines and price elasticity increases.[21] The estimates then are not much different from those of the others.

20. The quantity of imports of intermediate goods has been created by taking a weighted average of the quantities of raw materials and those of fuels with the weights fixed at the 1980 shares in imports.

21. The estimated equation is:

$$\log(Qus) = \underset{}{-10.2} + \underset{(4.64)}{.921}\, e + \underset{(3.08)}{.749}\, e(-1)$$
$$+ \underset{(1.97)}{.678}\log(CD) + \underset{(2.83)}{.835}\log(IE),$$

$R^2 = .982$, $D.W. = 2.65$, $S.E. = 0.737$,

3.1.2 Sources of Trade Balance Movements The estimates in Tables 4 and 5 may now be used to perform some accounting exercises. In Table 7, this is done by asking what the contributions of the major variables were when the trade balance exhibited large swings in the last decade and a half. The specification of trade equations in Tables 4 and 5 means that the movements in the trade balance may be broken down into the effects of expenditure growth (domestic and foreign), the real exchange rate (U.S. prices over Japanese GNP deflator), relative unit labor costs in Japan, oil price relative to U.S. prices, and other export and import prices in dollars relative to U.S. prices. Table 7 shows only the effects of expenditure growth, the real exchange rate, and oil price.[22] The others were, on average, small in magnitude. Numbers presented represent the effects of changes in these variables (from the end of one period to the end of the next period) on the trade balance, both in real yen (measured relative to Japanese trend GNP)[23], and in real dollars (measured relative to U.S. prices).

The first point to note from the table is that the Japanese trade balance movements in the 1981–85 period were dominated by domestic and foreign expenditure growth and oil prices. The effects of the real exchange rate were, although non-negligible, much smaller. This conclusion does not change much as export price elasticity increases from .92 to 1.19, as the numbers in parentheses indicate. The expenditure and oil price variables together explain more than the actual increase in the trade balance, both in yen and dollars, with the contribution of expenditures slightly larger.[24]

The insignificance of exchange rate effects is easily explained by the small price elasticities. Oil prices exert large effects on the trade balance because of small price elasticities of oil imports. The expenditure variables tended to create surpluses mainly because of the large difference in the elasticities in the export and import equations, and the high growth of U.S. expenditures in this period.

Where *Qus* is Quantity of exports to the U.S., *e* is the real exchange rate, *CD* is real consumption of durables, and *IE* is real investment in equipment. Note that most of the Japanese exports to the U.S. fall into either the *CD* or *IE* category.

22. In calculating the effects of the relative prices between U.S. and Japanese goods, we assume that the relative prices among U.S., German and Korean goods are constant. This may be somewhat restrictive, but relaxing this will not change the simulation result substantially.
23. The trend GNP series is constructed in the same way as the potential GNP series for the U.S. by de Leevu & Holloway [1983]. The midpoint of each expansion is first identified and then these are interpolated geometrically. We do not pretend that this is a good approximation of potential GNP. This is why we do not construct a full-employment budget deficit series later in the paper.
24. German and Korean export unit values (in dollars) were falling relative to U.S. prices during this period, which explains part of the descrepancy between the sum of exchange rate, expenditure and oil price effects and the actual change in the trade balance.

Table 7 SOURCES OF CHANGES IN THE JAPANESE TRADE BALANCE

	In yen				*In dollars*			
	NX/Y	Exchange rate effects	Expen-diture effects	Oil price effects	*NX/eP**	Exchange rate effects	Expen-diture effects	Oil price effects
1973–74	−2.6	−0.8	0.7	−3.7	−66	−22	26	−117
1975–77	2.2	−0.2	2.1	1.1	80	1	77	36
1977–80	−2.3	−1.1	0.3	−1.5	−81	−24	22	−56
1981–85	4.1	0.8	3.3	2.6	165	23	151	98
		(1.1)				(34)		
1986–87	−0.2	−2.3	1.1	0.8	122	−5	96	51
		(−3.0)				(−50)		
1986	0.5	−1.4	0.7	0.9	125	32	55	60
		(−1.7)				(14)		
1987	−0.7	−0.9	0.4	−0.1	−3	−37	41	−9
		(−1.3)				(−64)		

Notes: 1. Numbers show changes from period before. Those in yen are in %, i.e. relative to trend GNP, while those in dollars are realtive to P*, the PPI of U.S. manufactured goods (1967=100).

2. Numbers in parentheses use the export volume equation reported in f.n. 21.

Comparing the 1981–85 period with the others, we find that movements in oil prices accounted for most of the fluctuations in the trade balance, followed by the movements in expenditures. Exchange rate changes exerted the smallest effect, but were in no way negligible. For example, the sharp appreciation of the yen in the late 1970s and the 1985–87 period had a fairly substantial impact on the trade balance. The reason for the small effect of real exchange rate changes in the 1981–85 period, apart from the small price elasticities of trade flows, is that the depreciation of the yen in this period was relatively moderate.[25] It was large when compared with its previous peak in 1978, but was not relative to the 1979 or 1980 levels.

This result implies that the usual M-F type interpretation of the current account behavior in the 1980s has overemphasized the role of exchange rate changes in the effects of fiscal policy internationally. It has placed too little importance on the traditional income-expenditure mechanism and on the effects of oil prices.

3.1.3 The 1986–87 Period The persistence of large trade imbalances in the face of large corrections in exchange rates since 1985 has attracted widespread attention. Table 7 makes clear why the Japanese trade surplus has not decreased substantially. Despite the small price elasticities of trade flows, exchange rate changes during this period has substantially affected the trade balance. This is certainly because the size of the exchange rate change was unprecedentedly large.

The fact that the surplus did not decline in 1986 can be explained by the large decrease in oil prices and a continued high growth of U.S. expenditures (3.8 percent) relative to Japanese expenditures (4.1 percent). The two more than offset the effect of the yen appreciation. In 1987 the situation changed dramatically: there were no further decreases in oil prices, and the U.S.-Japan expenditure growth differential declined sharply. U.S. expenditures grew only at 2.4 percent, while Japanese expenditures at 5.0 percent. For the first time since 1982 the differential was a large negative number. Consequently, the trade surplus relative to GNP decreased fairly sharply in response to the further appreciation of the yen. The decrease in

25. Perhaps those who argue that exchange rate effects were quite large are implicitly measuring the effects relative to the case in which the dollar appreciated much earlier in response to the build-up of massive trade-deficits. We might also note that had the exchange rates moved in larger amounts (in the right direction) each time the trade account recorded a large imbalance, we would not have seen such large swings in the trade balance. In simple equilibrium open economy models, quantity variables such as income and expenditures matter much as if domestic and foreign goods are perfect substitutes. Our analysis has shown that, despite small elasticities, the effects of quantity variables are large because in a sense exchange rates do not move enough.

the surplus in dollars is smaller due to a J–curve type effect created by the presence of the initial surplus.[26–27]

3.1.4 Implications for Exchange Rate Movements The low price elasticities of trade flows imply that exchange rates must change by large amounts to generate a large reduction in the trade imbalances. But by how much? Using the elasticities in Tables 4 & 5 it is possible to calculate the future path of the Japanese trade balance under alternative exchange rate scenarios.

Relying mostly on December 1987 OECD forecasts of expenditure growth to 1 percent for the U.S. and 3 to 4 percent for Japan, we have carried out such calculations. A constant rate of 127.9 yen per dollar—the rate as of January 1988—until 1990 will create a cumulative decrease of the Japanese trade surplus of about 10 billion dollars. A constant rate of 100 yen per dollar will increase this by 5–10 billion dollars and the Japanese trade surplus in 1990 will be about two-thirds of what it is now.

This is certainly a very pessimistic result once one recognizes that the service account will be increasing at a very rapid rate as a result of the accumulation of net foreign assets. However, it would be a bad mistake to assume that price elasticities will stay low when the yen hits the 80 yen per dollar level. After all, the real exchange rate of tradables is now only slightly higher than the 1980 level. (See Figure 3.) It is also important to note the danger of focusing too much on exchange rate movements. The foregoing analysis indicates that a small change in expenditure variables would wipe out the effects of a large change in exchange rates.

3.2 ABSORPTION APPROACH

3.2.1 Saving and Investment Equations We now take a look at the components of aggregate demand in order to find major determinants of saving-investment movements. Table 8 presents estimation results of fairly conventional consumption and investment equations. Equations are all estimated by OLS, but the use of instrumental variables estimators to take account of the endogeneity of some of the variables did not change

26. The degree of improvement of the trade balance caused by an exchange rate depreciation is proportional to the sum of export and import price elasticities minus one, assuming initial balance of the trade account. However, Japanese exports were 1.517 times larger than the imports in 1985. Simple calculation reveals that the improvement of the trade balance from an exchange rate depreciation is proportional to .53 in yen, while proportional to .19 in dollars.

27. It would be interesting to see whether equations that have been estimated for up to 1985 inclusive could track the 1986–87 period well. This exercise has been carried out with no major finding of forecast errors, unlike the Baldwin & Krugman [1987] analysis.

Table 8 CONSUMPTION AND INVESTMENT EQUATIONS

	C/W (1960–85)		*Ih/Kh* (1970–86)		*If/Kf* (1970–86)
1/W	−189	const.	−0.452	const.	0.786
	(−3.97)		(−7.87)		(2.52)
const.	2.09	*i−Ph*	−0.000105	*Q/K*	0.171
	(8.05)		(−3.35)		(2.68)
PR/W	0.647	*NI/(Ph · Kh)*	0.0561	cost	−0.00039
	(8.17)		(10.7)		(−2.39)
T/W	−1.46	*P20*	1.56	*t*	0.00905
	(−4.84)		(7.59)		(6.84)
GW	−0.11			*t · D74*	−0.00232
	(−1.44)				(−2.82)
P40	−9.25			ln(*PO/P*)	−0.0064
	(−4.60)				(−.954)
P60	9.68			ln(*W/P*)	−0.193
	(3.83)				(−2.91)
S.E.	0.0229		0.00696		0.0042
D.W.	1.67		2.35		1.62
R^2	0.959		0.989		0.988

Notes: 1. *T*-statistics are shown in parentheses.
2. Variables from NIPA are all in billions of yen or 1980 yen.
3. Notations are *C*: consumption, *W*; Total wage payment, *T*: taxes net of transfers and interest on government bonds, *GW*: growth rate of wages over 5 years, *P40*: share of 40–59 years old, *P60*: share of 60 years old and over, *Ih*: real housing investment, *Kh*: real stock of housing, *i*: government bonds rate, *Ph*: deflator for *Ih*, P20: share of 20–39 years old, *If*: real fixed investment, *Kf*: real capital stock, *Q*: gross output, cost: cost of capital, *t*: linear time trend, *PO*: import price of fuels, *P*: GNP deflator.

coefficients estimates very much.[28] The sample period is the same as export-import equations, with the exception of the consumption equation, for which the use of demographic variables required a longer sample.[29]

The consumption equation is of the life-cycle theory type whereby

28. For example, the investment equation suffers from the endogeneity of gross output. The result of an instrumental variable estimator using the gross output net of investment as an instrument is:

$$If/Kf = \underset{(2.82)}{1.06} + \underset{(1.50)}{.114}\, Q/Kf - \underset{(-2.84)}{.000411}\ \text{cost} + \underset{(6.52)}{.0096}\, t$$
$$- \underset{(-3.10)}{.00275}\, t\, D74 - \underset{(-.319)}{.00222} \ln(PO/P) - \underset{(-3.16)}{.250} \ln(W/P),$$

which is not much different from the equation in Table 8. However, given the small sample size, it is not clear whether use of instrumental variables estimator gives us better results.

29. Unfortunately, 1986 and 1987 observations of some of the variables in Table 8 became available very late, and therefore were not used to update the estimation.

aggregate consumption depends not only on current income, but also on a long-run growth rate of real wages and variables representing the age structure of the population. Current income is divided into wages, profits and taxes (net of transfers) to allow for differences in the perception of the permanentness of each component of income.

It is fairly well known that household saving rates do not differ much by age in Japan.[30] However, on closer inspection, the saving rates of households whose head is between 40 and 60 years old are higher than those in other age brackets. The reported saving rates of households whose head is more than 60 years old are not much lower than those of the others. However, the work of Ando (1984) has shown that this may be due to the presence of a large number of old people who live with their children and are not counted as old households, but in fact save much less than younger people.

The estimated consumption function supports the prediction of the life-cycle theory. The propensity to consume profits is smaller than that for wages, an increase in the share of 40–59 years old decreases, and an increase in the share of 60 years old and over increases consumption. Higher growth of wages decreases consumption. Some rate of return variables on savings were tried, but they turned out to be insignificant.[31]

The results have the following implications for the long-run and for recent movements in consumption and savings. The long-run tendency for the savings rate to decline is caused by lower economic growth and the aging of the population. However, the latter increased the shares of both 40–59 year olds and 60-year-olds and over. Therefore, the decrease in the savings rate has been fairly slow so far.[32] The small decline in the rate of consumption after 1983 is explained by increased taxes.

The second equation relates housing investment (relative to the stock of houses) to the real interest rate, national income relative to the existing value of houses, and the share in total population of those between 20 and 39 years old, who are the major purchasers of new homes.[33]

30. According to a recent survey of household savings, the average savings rate of 20–39 years old is 16.1 percent, that of 40–59 years old is 20.2 percent and 60 years old and over, 18.9 percent.
31. One very simple test of the Ricardian neutrality theorem in the context of such a consumption function is to use government expenditure in place of taxes and add budget deficits as an independent variable. Under neutrality, the coefficients on the budget deficits and the life-cycle variables would be zero. Estimation of such an equation showed that these were significant, rejecting the neutrality theorem. Admittedly, this is a very naive test. But a survey of Burnheim [1987] points to the same conclusion.
32. This implies that as the aging of the population progresses the saving rate will decline substantially.
33. A recent study of Japanese housing investment by Takenaka [1987] found this last variable to be significant.

The results indicate that the sharp decline in the share of housing investment in GNP in the 1980s was mainly a result of the aging of the population. The interest rate variable, although significant, exerted a fairly small impact on housing investment; between 1980 and 1985 the decrease in the share in GNP of housing investment that is due to real interest rate movements is calculated to be at most .4 percent compared to the actual decrease of about 2 percent.

The equation for fixed investment reflects a compromise between neoclassical and Keynesian considerations. The determinants of investment may be classified into those of the rate of profit and those of the cost of capital. Under a neoclassical view, the rate of profit is determined by technology and factor prices; under a Keynesian view, sales constraints in the goods market makes the profit rate responsive to the level of demand. The equation contains gross output (nominal GNP plus intermediate goods imports divided by the GNP deflator) relative to the capital stock as a measure of demand. In view of the analysis of the factor price frontier carried out in section 2.1.3, (real) oil prices, wages and a time trend interacted with a post-1974 dummy have been included as neoclassical determinants of the profit rate. Finally, there is a conventional cost of capital variable.[34]

All variables display the expected signs and, with the exception of oil price, are significant. Exclusion of the time trend implies that oil prices would be significant, for some sample periods. However, for reasons already discussed in section 2.1.3, we shall proceed on the assumption that the time trend variable represents exogenous changes in productivity rather than the effects of oil prices.

The estimation result reveals that the slowdown in investment in the 1970s and 1980s is mainly due to the slowdown in aggregate demand, to increases in real wages, and to a smaller extent to the slowdown in productivity growth. In the 1980s the share of investment in GNP stayed approximately constant with the trend increase in productivity, offsetting the negative impacts of aggregate demand and real wages. The coefficient on the cost of capital variable suggests that the rise in the real interest rate in the 1980s decreased investment by at most .5 percent in terms of the share in GNP.

The results in Table 8 may be conveniently summarized as in Table 9 in order to highlight the significance of some of the determinants of the

34. The cost of capital here is defined by $(r + d)(1 - uz)/(1 - u)$ where r is the government bond rate minus the inflation rate of the deflator for investment, the depreciation rate d is assumed equal to 10.07 percent, u is the corporate income tax rate, and z is the present value of future depreciation allowances.

saving-investment balance in the 1980s. The table breaks down sources of savings and investment movements into long-run factors, interest rates, and short-run demand movements. The long-run factors include all demographic variables, technology changes and relative prices. The short-run demand factors include the effects of tax changes on consumption. We first ask what the level of saving and investment would have been if certain variables had been at their 1980 levels in 1985. We then take the difference between the actual and calculated levels of saving and investment to infer the contribution of the variable, which is reported in the table. Staying at the 1980 level means relative to trend GNP for demand variables and capital and housing stocks, and literally at the 1980 level for all others except the interest rate. Real interest rates were already high in 1980. Therefore, we took the average of the nominal government bonds rate minus the rate of increase in the GNP deflator for 1976–80, and applied the actual differences in various inflation rates in 1985 to calculate the hypothetical real interest rates in 1980. This procedure leads to an overestimation of the effects of interest rates.

The results show that each of these three exerted a fairly small effect on private net savings. The long-run factors had strong individual effects on savings and investment, but mostly they offset each other. In particular, the demographic forces decreased housing investment, but increased consumption, leaving net savings approximately unaffected. The magni-

Table 9 SOURCES OF CHANGES IN NET SAVINGS BETWEEN 1980 AND 1985

	Long-run factors	*Interest rate*	*Demand*	*Actual*
S	−1.3		−0.2	−1.4
If	0	−0.3	−0.5	−0.8
Ih	−1.9	−0.3	−0.1	−1.9
S–If–Ih	0.6	0.6	0.4	1.3
T				1.9
G				−1.5
G–T				3.4
NX				4.7

Notes: 1. Long-run factors include changes in the age structure of populations, productivity, real wage growth and all other relative price changes.
2. The effects of demand on savings include those of tax changes.
3. *T* is taxes net of transfer payments and interest on government bonds. *G* is consumption and investment of the general government. *NX* is the current account.
4. Numbers are relative to trend GNP.

tude of interest rate effects on investment is small to begin with. The stagnant behavior of domestic demand affected fixed investment adversely, but this is not a particularly large effect, either.

To summarize, there does not seem to have been large shocks to the private net savings in the 1980s.[35] Specifically, the small interest rate effects again cast doubt on the notion that the effect of assets prices on the goods market is the most important mechanism behind the effects of fiscal policy on the current account.[36]

The table presents the changes in government balances, as well, for comparison. It shows that the contribution the decrease in government expenditures alone has made to national net savings is larger than those factors that have affected private net savings. Moreover, as was pointed out previously, the increase in tax revenue was larger in magnitude than the decline in government expenditures. This requires explanation because there were no large changes in the tax structure during this period.[37] A natural interpretation would be that the average tax rates moved up as a result of economic growth.[38] However, I have just shown that there were no large scale stimulus on the domestic side of the goods market. In the last section, it was pointed out that the expansion of demand in the U.S. and

35. Absence of strong effects of oil prices on expenditures implies that a decrease in oil prices will increase income and savings. This is not particularly evident in Table 9 because a significant portion of the increase in income went into increased taxes and it was the government who increased savings.
36. A most serious objection to such a conclusion would be the following: suppose the typical M±F view was the correct model of the world. If the U.S. fiscal expansion and Japanese contraction exerted about the same order of effects on the interest rate, the interest rate would move very little and we would obtain almost exactly the same result as in Table 9. However, even in this case, the current account should move mainly in response to exchange rate changes under the M-F view. We have just seen that this was not the case.
37. There was a small decrease in the corporate income tax rate of about 3 percentage points. Given the share of corporate income, the effect of this tax increase would have been at most .3 percent of GNP. There were also some increases in individual commodity tax rates. But the taxes from those commodities (for which the tax rate has increased in many cases) actually declined.
38. One very simple way to measure the progressivity of taxes is to linearize the relationship between taxes and income for small changes in incomes. The following tax function is used in the simulation exercise to be reported below:

    (total tax revenue)/GNP = .2359 − 12591 (1/GNP),
    (31.3) (−7.76)

    R^2 = .857, 1975–86.

    This is in fact shows that the average tax rate increases with economic growth. Such a result is less clear when pre-1974 observations are included due to a number of tax cuts that were carried out in the high growth period. The results that came from a more complicated model of tax collection were not very different from those reported in the paper.

the decreases in oil price provided large favorable shocks to the Japanese goods market. Thus, I will now turn to an analysis of the relationship of U.S. expansion, the decrease in oil prices, the Japanese government budget deficits, and the current account.

3.2.2 U.S. Expansion, Oil Prices, the Japanese Budget Deficits and the Current Account The relationships between these variables have been analyzed by the conventional income-expenditure approach. That is, we used the behavioral equations estimated in previous sections to infer the multipliers that can be applied to various exogenous shocks. Admittedly, this is a very crude approach to the problem. However, given the relative unimportance of the effects of asset prices, the analysis below might provide a useful upperbound of the effects of the shocks on the goods market.

First, it is necessary to quantify the exogenous shocks. Concerning the U.S. economic expansion, I take the baseline case to be the growth of U.S. domestic expenditures at an annual rate of 2.5 percent, which is the average for the 1970s, compared with the actual of 3.4 percent for the 1980–86 period. The difference is taken to be the shock provided by the U.S. economic expansion. We then assume that the German and Korean expenditures are affected according to the multipliers in the EPA world econometric model—.49 for Germany and 1.5 for Korea. The elasticities in Table 4 are used to calculate the changes in Japanese exports.[39]

The shock created by the decrease in oil prices is assumed to be the difference between actual oil imports and those that would have prevailed if oil prices had stayed at the 1980 level relative to U.S. prices. Elasticities estimates in Table 5 are used to calculate the change in oil imports.

It might also be interesting to analyze the impacts of real exchange rate movements and the Japanese fiscal contraction. For the real exchange rate, the baseline case is, again, a constant real exchange rate at its 1980 level. In the absence of fiscal contraction, I assume that the ratio of Japanese government expenditures to trend GNP would have stayed at its 1980 level.

The goods market equilibrium condition is gross output (GNP plus raw materials and fuels imports) equal to the sum of consumption, investment, government expenditures and non-oil trade balance. I assume that the GNP deflator is not affected by the experiment. Change in tax revenue is calculated by the tax functions presented in Footnote 38.

The results of such an exercise are summarized in Table 10, where the

39. It is assumed that exports to regions other than the U.S., South East Asia, and Europe stay constant. In this sense the effects of U.S. economic expansion is somewhat underestimated.

Table 10 SOURCES OF TRADE BALANCE AND BUDGET DEFICIT CHANGES

	Government budget surplus	*Trade balance*	*Initial shock*
Actual	−0.8	3.8	
U.S. expansion	−1.8	2.8	−1.4
Oil price decrease	−2.0	2.3	−1.9
Real exchange rate change	−1.2	3.4	−0.6
Japanese fiscal contraction	−1.4	3.2	1.6

Notes: 1. The first two columns show budget surplus and trade balance relative to simulated GNP in the absence of the shocks.
2. The third column indicates the size of the initial shock relative to trend GNP.

size of the shock (relative to actual GNP), the levels of government budget surplus, and trade balance (relative to the simulated GNP) *in the absence of* the shocks are shown. The initial impacts on the Japanese goods market happen to be approximately the same for U.S. expansion, oil price change and the Japanese fiscal contraction. The effects of the U.S. expansion and oil price decrease are similar if allowance is made for the impact of the former to be underestimated. The effects of the absence of Japanese fiscal contraction are smaller. The small effect on the trade balance is due to the small income elasticity of imports. The effect on the budget deficit is also small, more or less because of the increase in GNP.[40]

The result allows us to explain the increase in the Japanese trade surplus in the 1980s as follows: The U.S. expansion, the decrease in oil prices, and the Japanese fiscal contraction explain about three fourths of the increase in the surplus. The rest is explained by exchange rate changes and other less important shocks. To the extent that the U.S. economic expansion and dollar appreciation and possibly higher real interest rates in Japan are attributable to U.S. fiscal expansion, the effects of U.S. fiscal policy have been larger than those of Japanese fiscal policy.[41]

The Japanese budget deficit decreased by about 4 percent of GNP in the first half of the 1980s. Table 10 shows that somewhere between two-thirds

40. For example, the effects on the nominal government deficit are about the same between U.S. economic contraction and Japanese fiscal expansion. But the latter increases GNP, resulting in a smaller deficit relative to GNP.

41. Of course, this depends on the choice of the baseline. A higher U.S. expenditure growth than 2.5 percent in the baseline case makes the simulated effects smaller. On the other hand, an assumption of zero growth in U.S. expenditures would have produced almost no decrease in the Japanese budget deficit and a minor increase (about 1 percent of GNP) in the current account surplus.

and three-fourths of this came from foreign shocks, and the remainder from the decline in Japanese government expenditures. Previous researches seem to have underestimated the endogeneity of the movements in the deficit, and therefore overestimated the impact of Japanese fiscal policy on the trade balance. In the 1980s foreign shocks were more fundamental and the Japanese budget deficit decreased largely in response to these.

3.3 THE 1986–87 PERIOD

As has been pointed out, the 1986–87 period has seen some tendency for the current account surplus to decline. The interpretation of this from the current account side has been given in section 3.1.2. Let us now relate it to developments on the saving-investment balance side.[42]

Some information on the recent behavior of savings and investment has already been summarized in Table 1. Clearly, the increase in the current account surplus in 1986 is mainly associated with an increase in private net savings (relative to GNP). This is primarily a result of a decrease in both fixed investment and consumption. Investment declined heavily in the manufacturing sector, reflecting the effects of a sharp appreciation of the yen and a resulting decline in exports. The decrease in consumption is more difficult to explain. A careful look at the data on consumption suggests that real consumption in 1986 was increasing at a higher rate, 3.6 percent, than real GNP, 2.6 percent. Thus, the decrease in the share of consumption comes entirely from a lower growth of the consumption deflator—.1 percent, than the GNP deflator—1.5 percent. Essentially, this is a terms of trade effect; people were saving the increase in income arising from the yen appreciation and the decrease in oil prices.[43]

Consequently, the behavior of net savings in 1986 continued to be dominated by shocks to the current account. However, unlike in earlier periods in the 1980s, private net savings increased, rather than government savings. This was due to a very low growth rate of nominal incomes; the growth rate of nominal GNP was lowest in the last two decades.

In 1987 private investment, both residential and non-residential, pulled the economy out of the mild recession of 1986 and produced a decline in the current account surplus. It is difficult at this stage to make a proper account of this increase in investment. It might mean that the period of stagnant investment which lasted for more than a decade is now over. If this is the case, the current account surplus will decline substantially in the

42. Moriguch [1988] makes a similar point in a less formal way.
43. An inclusion of import prices in the consumption function reported in Table 8 produced a positive coefficient, although in many cases it was insignificant.

near future, given that the life-cycle theory interpretation of savings suggests that consumption will also be increasing as the population ages.

An alternative interpretation is that the boom in investment is a lagged response to the increase in income generated by the yen appreciation and to the decline in oil prices. Although we have rejected the idea of a strong correlation between investment and oil prices, especially for the early to mid-1980s, it is entirely possible that the correlation is stronger over a broader time frame. In this case the boom in investment will be short-lived and declines in the current account surplus in the near future will not be very large.

4. Recapitulation and Some Further Considerations

4.1 RECAPITULATION

The foregoing discussion has been aimed at two objectives. First, we have tried to examine the correlation between fiscal policy variables and the current account in the 1980s in a longer-term perspective in order to appreciate the special problems in the 1980s. Second, we have carried out a somewhat detailed short-run analysis of the 1980s to find out the source of the correlation.

To summarize our major findings on the first objective, we pointed out that the Ricardian view of the world may not be very realistic because consumption does not move as theory predicts. However, in connection with current account movements, we saw that investment had become more important and that the relative stability of private investment in the 1980s has created the strong connection between the current account and movements in the budget deficits. In previous periods, private investment dominated the behavior of total net savings and therefore the current account. (Figure 4.) It is important to note that the Japanese government budget deficit moved by a larger amount in the 1970s than in the 1980s. (Figure 3.) Despite this, the increase in the budget deficit in the late 1970s was associated with an increase in the current account surplus. The reason is simply that the major shock was a slowdown in investment and the budget defict was a response to it.

The stability of private investment in the 1980s reflected that of fixed investment. A potential source of instability in fixed investment was the behavior of oil prices. The increase in oil prices in 1979–80 might have led to a sharp decrease in investment in the early 1980s, followed by a sharp recovery as oil prices started to decline in the early 1980s. This did not happen and possible reasons why not were discussed in section 2.1.3.

Turning to the analysis of the 1980s, we have pointed out that the usual M-F view somewhat overemphasized the role of asset prices in the

transmission of the effects of fiscal policy. The importance of the traditional Keynesian income-expenditure mechanism has been found to be non-negligible. A corollary to this has been the finding that the reductions in the Japanese budget deficits were, to a great extent, a response to foreign shocks—the increase in U.S. budget deficits and declines in oil prices. To say the least, attempts of the Japanese fiscal authority to cut the budget deficits have been successful because of the favorable foreign shocks.

4.2 JAPANESE TRADE BARRIERS AND THE CURRENT ACCOUNT

One popular explanation of the Japanese current account surplus emphasizes the importance of Japanese trade policies and barriers, which have promoted exports and restricted imports. It may be appropriate to comment briefly on this.

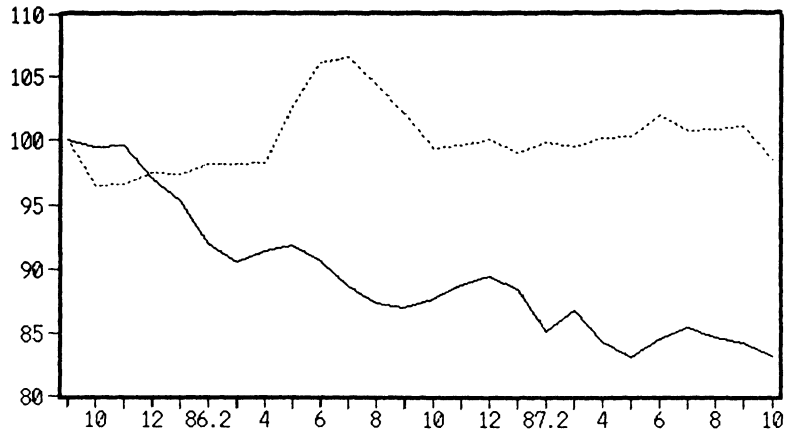
Given that the income-expenditure mechanism has been determined to be important, a change in trade policy—a change in the $Z2$ variable of equation (i)—does affect the current account. However, in order to argue that trade policies and barriers played a major role in the increase in the current account surplus in the 1980s, one must show that they have increased in importance during the period. This is a hard task to accomplish. Recent works by a number of authors (including Bergsten & Cline [1985] and Saxonhouse and Stern [1987]) have mostly shown that Japanese trade barriers have not been a major cause of the surplus.

Instead of discussing the importance or unimportance of these intangible factors, we will comment briefly on the relationship between trade policies or barriers and the response of the Japanese trade balance to the recent exchange rate changes. In the last section we found that price elasticities of trade flows are fairly low for both exports and imports. Do trade policies or barriers play a role here?

There are various "voluntary" restrictions on exports, which now affect a large portion of Japanese exports. It is easy to argue that exports do not respond to price changes when restrictions are binding. Although our attempts to find structural changes in export functions were unsuccessful, some authors have argued that the restrictions have changed the pattern of the responses exports have to exchange rate changes. (Fukao & Nakakita [1987].)

Regarding imports, many have expressed concern over the low share of manufactured goods imports. This is changing rapidly, as is evidenced by the large income elasticity shown in Table 3. Manufactured goods imports are now almost 50 percent of total imports. However, the small price elasticity is certainly disturbing. In Figures 8 and 9 I show import and domestic prices for those goods for which there are official and unofficial

Figure 8 IMPORT AND DOMESTIC PRICE INDEXES ITEMS WITH IMPORT BARRIERS



——import price ····· domestic price. Source: Bank of Japan (1988)

import barriers and also for other goods. The former includes such goods as beef, sugar, silk and canned fruits. Clearly, import barriers have prevented low import prices from penetrating into domestic markets. Without a doubt this has limited the price response of imports.[44] Although it is hard to quantify the macroeconomic significance of such effects, this point will have to be addressed in future studies of Japanese imports behavior.

In sum, trade barriers may have limited the response of trade flows to exchange rate changes. However, the burden is on both sides—Japan and foreign countries—to lift such barriers and increase price elasticities.

4.3 THE ROLE OF CAPITAL FLOWS

As an accounting identity, a large current account surplus corresponds to a large capital outflow. To the extent that capital outflows in the 1980s have been a response to the current account surpluses, there are no further problems to analyze. However, there are reasons to believe that a certain autonomous element has existed in the Japanese capital outflows in the 1980s.

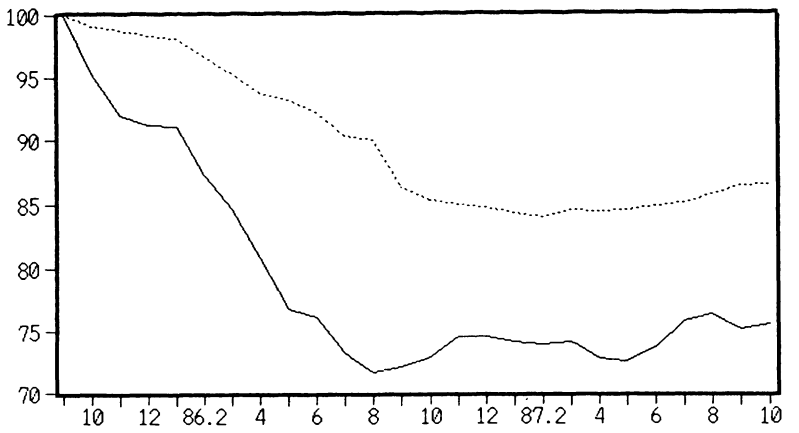
44. Lawrence [1987] carries out a detailed analysis of Japanese imports of manufactured goods. He concluded that although the effect mentioned does occur, it is less important than other intangible barriers, and the price elasticity of manufactured goods imports are, on average, higher than ours. Our result may well suffer from aggregation biases.

In Figure 10 we show the behavior of the current account, the long-term capital account, and foreign exchange market intervention by the monetary authority. The pattern of correlation among the three has changed over the last decade and a half. In the 1970s current account surpluses corresponded first to large foreign exchange market interventions and, with a lag, to increased long-term capital outflows. In contrast, in the early to mid-1980s long-term capital outflows were larger than the current account surplus and, to some extent, preceded the increase in the current account surplus.

Ueda [1987] has provided the following interpretation of such a pattern. In the 1970s capital outflows were mainly responding to current account surpluses. Thus, emergence of a current account surplus created a strong pressure for the yen to appreciate. This led to massive interventions by the authority, which was trying to prevent large changes in the exchange rate. As the appreciation of the yen hit its peak, the expectation of a future depreciation takes over, which in turn stimulates capital outflows.

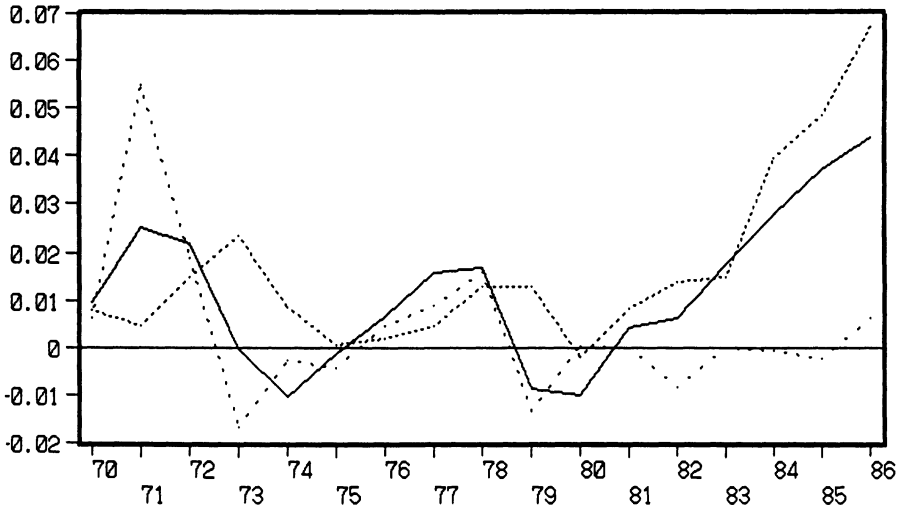
The source of capital outflows in the 1980s is quite different. A simple regression analysis indicates that there were three major factors behind the large capital outflows in the 1980s: increases in foreign (relative to domestic) interest rates; large money flows into institutional investors, whose propensity to hold foreign assets is higher than others, and relaxation of capital controls which had previously placed severe restrictions on the amount of foreign assets the institutional investors held. The first two may be

Figure 9 IMPORT AND DOMESTIC PRICE INDEXES ITEMS WITHOUT IMPORT BARRIERS



——import price ····· domestic price. Source: Bank of Japan (1988)

Figure 10 CURRENT ACCOUNT, LT CAPITAL OUTFLOWS & CHANGES IN RESERVES/GNP



——current account ····· LT cap. account · · · offi. intervention

considered as a response to other shocks, such as domestic and foreign fiscal policy. However, the third is certainly an autonomous development on the capital account side. Ueda finds that the relaxation of controls played a major role in the sharp rise in capital outflows in the mid-1980s when the U.S.-Japan interest rate differential was no longer increasing.

Such an account of the behavior of the capital account in the 1980s suggests that had it not been for the rapid relaxation of controls and the resulting increase in the demand for U.S. assets by the Japanese, the yen would have started to appreciate at a much earlier stage.[45] Although our analysis has emphasized the weak impact of exchange rate changes on the current account, large enough changes in the exchange rate would have certainly checked the increase in the current account surplus.

5. *Concluding Remarks*

The major conclusions of the paper may be summarized as follows:

(i) The movements in the Japanese current account in the 1980s corre-

45. Sachs & Roubini, *op. cit.* reaches a similar conclusion.

spond to two important developments in domestic saving and investment balances. First, private investment (relative to GNP) has decreased more sharply than savings since the early 1970s, creating a large excess of private savings over investment. Second, the large government budget deficits in the 1970s, which mostly offset the private net saving, virtually disappeared in the 1980s. This paper is mainly concerned with the interpretation of this second correspondence.

(ii) Neoclassical perspectives which emphasize the Ricardian neutrality theorem or prospective changes in future incomes and productivities do not seem to be useful for interpreting the second correspondence, while they may be useful for understanding the first. Even in that case it would be the behavior of investment that is crucial for understanding current account movements. The absence of strong effects of oil prices on investment in the early to mid-1980s created stability of fixed investment, which in turn increased the correlation between fiscal policy and the current account.

(iii) Estimates of price elasticities of trade flows and interest rate elasticities of domestic expenditures are fairly low, suggesting some modifications to the popular Mundell-Fleming type interpretation of the correspondence between fiscal policy and the current account.

(iv) Major shocks to the Japanese goods market in the 1980s were U.S. economic expansion, decreases in oil price and the decrease (relative to GNP) in Japanese government expenditures. During the period of 1980–85, the three exerted roughly the same degree of effect on the Japanese trade balance through conventional income-expenditure mechanism, and in total explain most of the increase in the surplus during the period.

(v) The decrease in the Japanese budget deficits in the 1980s was partly a result of the slow growth of expenditures, but more importantly was a response to the U.S. economic expansion, oil price decrease, and to some extent, the dollar appreciation as these increased Japanese income and taxes. In this sense, previous researches have overemphasized the effects of Japanese fiscal policy on the current account.

(vi) The 1986–87 experience is also explained in our framework. In 1986 the sharp decrease in oil prices continued to dominate the behavior of current account and saving-investment balance, but with a larger effect on private net savings than on the budget deficit. It is still premature to judge whether the surge in private investment in 1987 signals the resurgence of a strong correlation between investment and the current account.

The author would like to thank S. Collins, R. Dornbusch, S. Fischer, M. Fujii, F. Hayashi and H. Yoshikawa for helpful comments and discussions and F. Kratz for research assistance.

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Comments

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This paper addresses an interesting and important topic—the large Japanese current account surplus. The subject is of particular interest for at least two reasons. The first is that the global current account imbalances are at the center of a heated international policy debate. On this side of the Pacific, we are familiar with the ongoing protectionist pressures to reduce the U.S. deficit. The second reason is that these persistent imbalances have raised provocative theoretical and empirical questions about, for example, the role of exchange rates in external balance adjustment.

This paper seeks to examine one aspect of this broad issue. It asks why exchange rate swings have not reversed the Japanese current account surplus, and what role fiscal policies have played.

Using standard macroeconomic accounting identities, the paper documents the major developments on the trade side (imports and exports) and on the sectoral balance side (savings and investment). Out of this documentation it reaches two central conclusions. First, it is claimed that most of the Japanese current account surplus can be attributed to the Japanese fiscal contraction, the U.S. fiscal expansion, and the decline in oil prices. This conclusion is relatively uncontroversial and, as the paper points out, is consistent with the findings of many other studies.

The second central conclusion is that foreign shocks were much more important than the Japanese fiscal contraction in explaining the Japanese external surplus. I was very surprised, in fact, to read that other researchers, such as Sachs and Roubini (1987) have overstated the role of Japanese

fiscal policy because of their failure to endogenize government revenues. Government revenues are certainly endogenous in the multi-country simulation model used by Sachs and Roubini. So is the exchange rate, which is treated exogenously by Ueda. In any case, their simulations imply that the contraction in Japanese fiscal policy is not that important in explaining the U.S. current account deficit. However, it is the most important factor in explaining the Japanese current account surplus during 1980–1985, accounting for a shift of nearly 2 percent of GNP.

In general, it was not clear to me exactly what position was being taken about the role of fiscal policies in the U.S. and Japan. The main problem is that the paper often did not specify which time period was being discussed, and I do not believe one can get a handle on this issue without paying careful attention to time period.

The paper begins by claiming that "popular" explanations of the imbalances (which emphasize fiscal policies) seem to explain the course of the world economy in the 1980s fairly well—except for exchange rate movements since 1985. Thus, exchange rates and other asset prices are taken as exogenous. However, this does not solve the problem. Most of the other empirical work I have seen suggests that there were also shifts in goods markets in the mid-1980s.

The remainder of my comments will address two issues. First, I will spell out the "popular" view about the role of fiscal policy in explaining external balances, suggesting that this view adequately explains those balances for 1979–85, but not for the years that follow. Second, I will briefly outline some recent suggestions to explain post-1985 developments.

Because it will be familiar to many on this side of the Pacific, it is helpful to begin by summarizing the "fiscal policy story" from the U.S. perspective. Krugman (1987b) provides a more extensive discussion of the key points. In a nutshell, the story is that the rise in the U.S. budget deficit contributed to a decline in domestic savings relative to investment, putting pressure on real interest rates in the U.S. These factors led to a foreign capital in flow and to a real exchange rate appreciation. The external current account deficit is the counterpart to the capital account surplus.

The parallel "fiscal policy story" for the Japanese 1979–85 experience would go as follows. The episode begins with an increase in the government budget surplus. As described by Sato (1988), the reduced expenditures stemmed from concern over Japan's ability to weather future external shocks following the experience with the second oil price rise. This fiscal policy shift contributed to a rise in the national savings-investment gap. A key part of the story is the Japanese liberalization of international capital movements in 1980. Thus, in response to the fall in real rates of return relative to those abroad (i.e., in the U.S.), there was a massive outflow of

capital from Japan and a real exchange rate depreciation. The external current account surplus offset Japan's capital account deficit.

However, this story works considerably less well in explaining the post-1985 experience. In particular, we have seen persistent fiscal deficits in the U.S. and surpluses in Japan, large reverse exchange rate swings and sluggish adjustment of current account imbalances. Should we attribute these developments to shifts in behavior since 1985? Or has the story always been more complex, so that the simple explanations for the earlier period are misleading?

To my mind, the recent developments are the most interesting aspects of current account behavior. Therefore, I was disappointed that Ueda's paper did not attempt to compare or contrast them with the earlier period. In fact, as was mentioned before, the paper is often unclear about exactly which period is being discussed. This is a more serious problem, because it confuses the key issues.

I was also very surprised to learn that none of the regression equations showed evidence of a structural shift after 1984. Most other studies I have seen do. For example, simulations from the Federal Reserve Board and the McKibbon-Sachs multi-country models track well pre-1985, but show growing divergences afterwards. (See Hooper and Mann, 1987 and Sachs and Roubini, 1987.) Loopesko and Johnson (1987) find evidence of shifts in Japanese import and export volume and export price equations. Since Ueda does not provide statistical tests, plots of residuals or other relevant information, it is difficult to tell how his results might be different. In any case, the question of structural shifts warranted further analysis and discussion.

There is a growing literature which does offer explanations for the long lags in recent trade balance adjustment to exchange rate changes. The issues raised in that work seem central to any discussion of the large Japanese surplus. However, they are not mentioned here. In the remainder of my comments, I will touch on a few relevant points.

A number of authors have concentrated on the pass through of exchange rate changes to prices of Japanese exports. Although pass through seems to have been about 100 percent during 1974–79 (Moriguchi, 1987), it seems to have fallen considerably since then. Loopesko and Johnson (1987) report an average pass through of just 47 percent from February 1985 to February 1987. For some commodities, they find the pass through to be as low as 10 percent.

Hooper and Mann (1987) have emphasized the behavior of profit margins. They find that Japanese producers have squeezed margins during the 1985–87 yen appreciation. These observations raise the questions of whether further yen appreciation will result in greater pass through to

prices, and presumably to a reduction in Japanese exports once profit margins have fallen far enough.

In addition to these empirical studies, there is some interesting theoretical work. A number of authors have examined firms' pricing decisions under different market structures. For example, Krugman (1987a) and Dornbusch (1987) point out that exchange rate changes may alter the elasticity of demand and therefore the prices of foreign producers. Others have focused on intertemporal issues, either on the supply side (Krugman, 1987a) or on the demand side (Froot and Klemperer, 1988).

In summary, this paper has not changed my view that fiscal policies, in Japan as well as in the U.S., go a long way in explaining the current account developments through the mid-1980s. However, the real puzzles appeared more recently, and this paper has not helped me to understand the experience since 1985.

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Comment

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Ueda's analysis of the Japanese external balance is provocative: the Mundell-Fleming paradigm is accepted, but real exchange rate effects and the impact of interest rates on spending are played down. The direct expen-

diture effects of fiscal policy are placed at the center of the explanation. Supply side considerations are basically shunned from the analysis, as are elements of the new classical macroeconomics.

Table 1 might be used to show the Ueda position: the change in the current account is roughly of the same order as that in the budget. Both investment and saving do change, but the changes offset each other at least partially. Hence the budget change stands out as the major event.

In my comments I will raise two issues: First, how would one tell a story of the Japanese external balance when supply considerations are also relevant? Second, what are the structural factors playing a role in the development of the Japanese external balance?

Trade Flows

We briefly review here the trends in the Japanese external balance. Figure 1 shows net exports as a fraction of GDP, using national income account definitions. The basic pattern of surplus is only interrupted by the two oil shocks. The role of oil in Japan's external balance is apparent from these numbers: between 1972 and 1974 the share of oil in imports rose from 17.6 percent to 36.4 percent. From 1976 to 1978 it further increased from 32.3 percent to 41 percent. By 1986 the share of oil was down to only 18.8 percent. Changes in oil prices thus play a central role in explaining movements in the external balance.

The long-run trend in the external balance is compared in Table 2 to the same data for three other countries: the U.S., Germany, and Korea. Compared to Germany's stable and steady external surplus, Japan shows an emerging trend toward surpluses. The U.S. by contrast shows already in the 1970s negative net exports, which since then have turned sizeable. Korea, finally, represents the typical underdeveloped country that finances growth with external borrowing and then gradually evolves toward a position of a positive net external balance.

In writing the story of Japan's external balance, one question surely is how important long-run trends are in the current developments and how

Table 1 JAPAN: MACROECONOMIC AGGREGATES (PERCENT OF GDP)

	Average 1981–86	*5-Year Change*
Saving	28.0	−0.7
Investment	23.3	−1.7
Budget	−2.5	3.0
Current Account	2.3	3.9

Source: Chouraqui et al (1987), Table 5.

much short-run factors are at work. A comparative evaluation (with a common analytical framework) of various countries' trend behavior in the external balance might offer an interesting perspective on this question.

Figure 2 shows a third view of the Japanese external balance. The figure shows *net* exports in constant 1980 yen. Focusing on the trade surplus in constant prices allows us to discern the ongoing real adjustments. It is interesting to note that the turn in the trade balance is primarily due to a sharp increase in imports. Over the period 1984:4 to 1987:4 export volume fell by 0.2 percent, but imports in constant prices rose by 18 percent. That is striking evidence of a major change in Japanese trade flows.

Ueda argues that relative prices have played a minor role in trade flows, spending changes have dominated in his view. But in my judgment, his analysis does not pay sufficient attention to the structural transformation of the Japanese economy over the past decade. It is apparent that when one allows for a time trend in a Japanese export equation the trend is highly significant and quantitatively important. The role of foreign demand becomes significantly smaller. For example, an equation for Japanese export volume to the U.S., using quarterly data for the period 1973:1–1987:1, shows the following results:

Figure 1

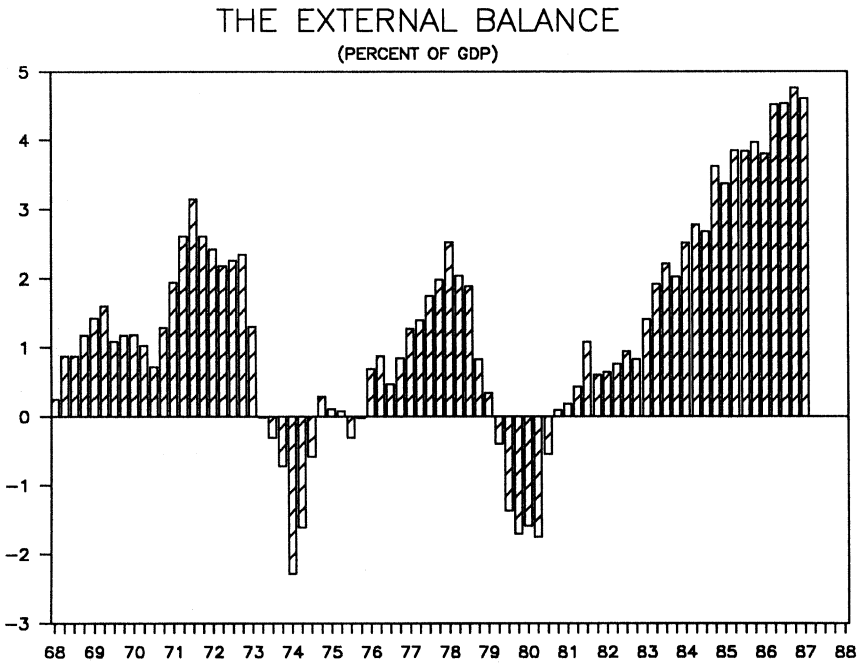


Table 2 COMPARATIVE EXTERNAL BALANCE TRENDS (NET EXPORTS AS PERCENT OF GDP, NIA)

	1950–59	*1960–69*	*1970–79*	*1980–86*
Japan	0.1	0.2	0.8	2.3
U.S.	0.2	0.2	−0.5	−1.8
Germany	2.7	2.1	2.6	2.5
Korea	−8.7	−10.1	−5.9	−1.6

Source: IMF

$$Q = 0.61 - 0.78\ \text{PRICE} + 0.018\ \text{TIME} + 1.15\ \text{DEMAND}$$
$$(0.33)(-3.6) \qquad (6.3) \qquad (3.1)$$

$$R^2 = 0.99, \quad Rho1 = 1.22, \quad Rho2 = -0.52$$

where Q and PRICE are the logs of export volume and of the relative price of Japanese exports to the U.S. producer price of manufactures. DEMAND

Figure 2

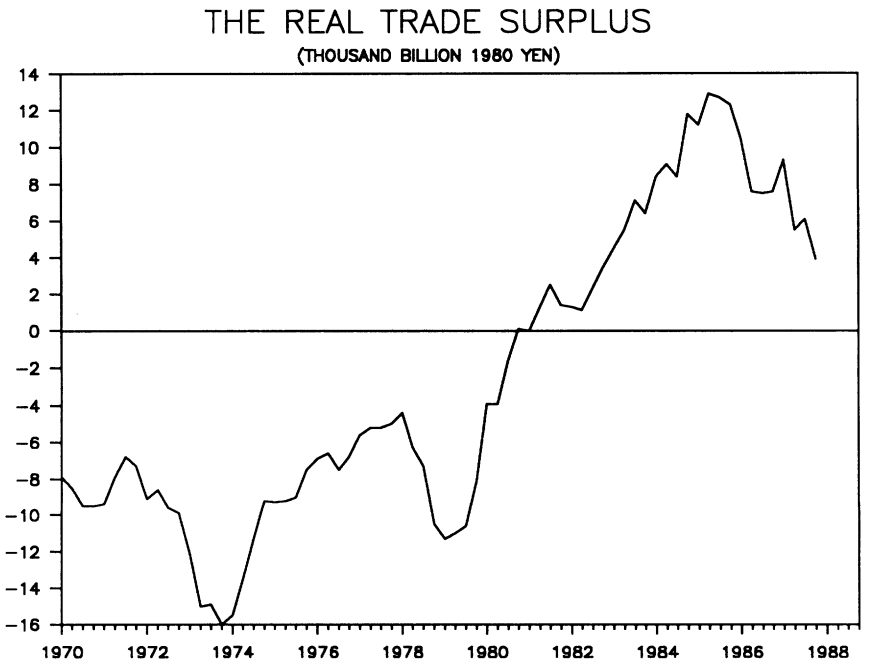
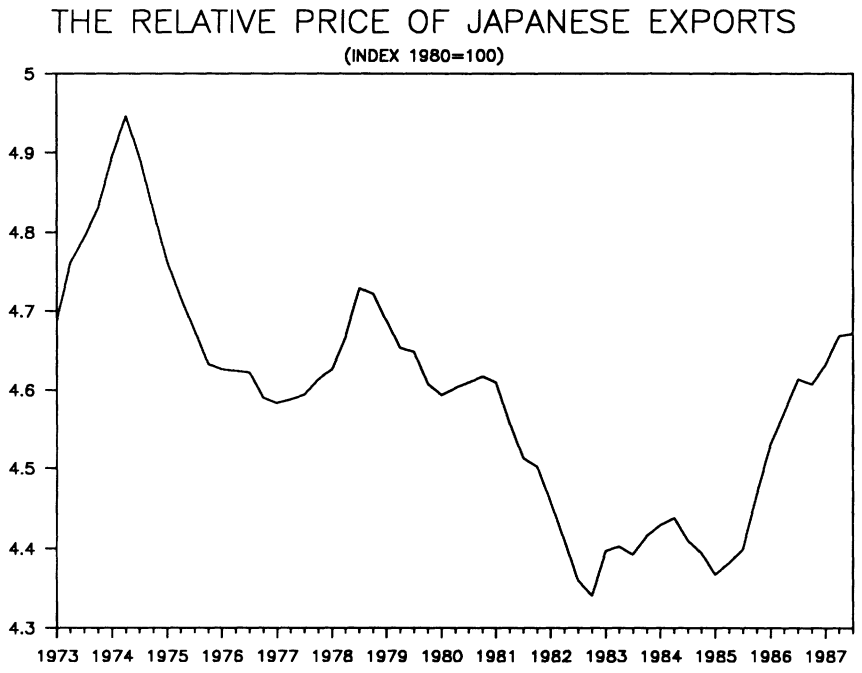


Figure 3



here is proxied by U.S. industrial production. The *t*-statistics are reported in parentheses. Figure 3 shows the real price variable used in this regression.

The significant time trends in the export equation reflects the structural transformation of Japan as it becomes a supplier of high quality manufactures, from automobiles and consumer durables to capital equipment. A simple time trend is a crude way of representing that development, but it certainly dominates capturing it by the U.S. demand variable.[1]

Fiscal Policy and The Real Exchange Rate

The Ueda rendition of the Japanese external balance emphasizes the impact of fiscal developments in the U.S. and Japan. In the period 1980–87 the cumulative change in cyclically adjusted non-interest budgets was +3.4 for

1. The equation also fails to pay attention to voluntary export restraints on automobiles and other aspects of a realistic modelling of trade flows. It is important to note that Japanese exports to the U.S. are not only affected by the U.S.-Japanese relative price, but also by the prices of Japan relative to those of other suppliers including Korea and Western Europe.

Japan and −1.7 for the United States. These fiscal changes affect income and spending, and hence trade flows: U.S. fiscal expansion spills over into increased imports from Japan, Japanese fiscal contraction slows down the growth in import demand.

It is quite plausible that Japanese fiscal policy is endogenous to international developments: changes in foreign demand that favor Japanese goods are used as an opportunity to achieve fiscal consolidation under conditions of full-employment. A full-employment model of the Japanese economy makes this point.

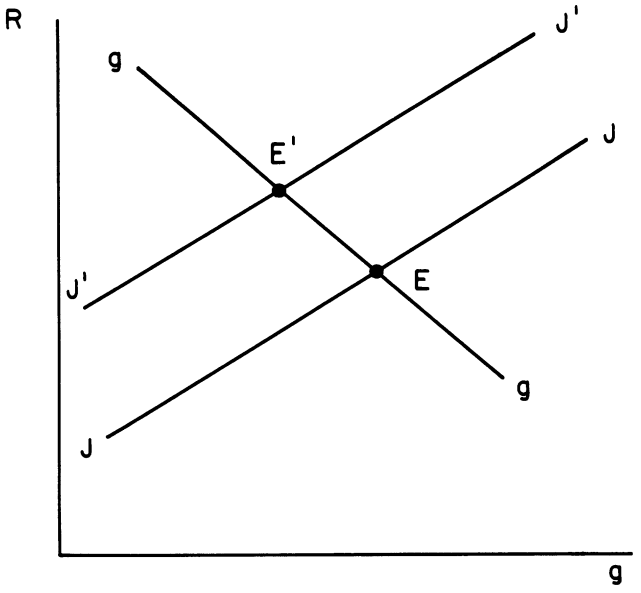
$$J(g,R) = 0 \quad (1)$$

$$g = g(R) \quad (2)$$

Let g be the structural (non-interest) budget deficit in Japan and R the relative price of Japanese goods. In Figure 4 the schedule JJ shows full-employment in Japan, given U.S. demand. The schedule gg represents the governments reaction function for the budget: when the (full-employment) real exchange rate appreciates fiscal policy is tightened.

Now consider the consequences of a U.S. demand expansion. The increased demand for Japanese goods shifts the JJ schedule up and to the

Figure 4



left to $J'J'$. The new equilibrium at point E' involves a reduction in the budget deficit and a real appreciation. The budget restraint frees resources for export and in this way reduces the required real appreciation that otherwise would occur.

This rendition is consistent with the broad pattern of the Mundell-Flemming analysis: real appreciation and current account swings are the counterpart of the demand changes induced by fiscal policy changes. But this story can be told even under conditions of full-employment.

Even though this rendition captures the broad pattern of changes in the real exchange rate and in the current account, it does not take into account important structural aspects of the Japanese economy in the recent past. Real commodity prices, including oil, are among these and so is the increasing trade with South East Asia.

Structural Aspects of the External Balance

Sato (1988) has emphasized a set of factors quite different from those characterizing the Mundell-Flemming model. He notes that the oil and commodity shocks of the 1970's were viewed as a national emergency, bringing about a major structural adaptation of the economy to compete in world markets, even in the face of high real prices of essential primary commodities. The export drive in manufacturing has been one consequence and it was built in equal part on cost performance and a drive for market access and marketing. On the side of cost reduction labor productivity growth was 37 percent over the decade between 1973–78 and 1983–86 and the gain in energy efficiency amounted to 64 percent.[2]

The sharp decline in the real prices of commodities thus left a structural surplus in an economy that could not adjust rapidly to an era of cheap commodities. Indeed, with a possibility of a resurgence of high real prices the behavior was altogether rational.

Another important feature in Japanese trade is the new division of labor that is today emerging in South East Asia. Under the pressure of yen appreciation, Japanese export industries have had to seek cost reductions. Part came from a sharp reduction in domestic labor costs. But an important contribution took the form of increased imports from the newly industrialized countries in South East Asia. There is little doubt that the strong yen has created the threshold effects for a substantial integration of these economies into the Japanese export sector and the Japanese economy at large. Table 3 shows the share in Japanese imports and exports from four

2. See Yoshikawa (1987).

Table 3 JAPANESE TRADE WITH 4 NICS (PERCENT OF TOTAL JAPANESE TRADE)

	1970–79	*1980–86*	*1987*
Exports	13.8	13.9	17.2
Imports	5.6	6.9	12.6

newly industrialized countries: Korea, Taiwan, Singapore, and Hong Kong.

The recent strength of the Yen, relative to the dollar, has surely helped develop this new division of labor. But it is certain that, once established, it will now develop much further.

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Discussion

Most of the floor discussion took issue with specific assertions made by the author or discussants. Robert Barsky doubted a point made by Rudiger Dornbush, that Japan is near full-employment so the Mundell-Flemming model is inappropriate. Barsky claimed that in Japan there is a lot of labor hoarding. Ueda agreed. Maurice Obstfeld was unconvinced by Ueda's dismissal of Ricardian equivalence. He noted that Ueda's tests of Ricardian equivalence depend on a very specific set of restrictions with respect to the discount and international interest rates, and that a more general rejection was not merited. Robert Gordon worried that the paper omitted supply-side factors that might be important. He also wondered how to explain Japanese firms' ability to cope with large swings in relative prices when US firms have struggled with these same swings. Stan Fischer questioned whether Japanese import barriers could be ignored in discussing the trade surplus. Finally, Robert Hall claimed that the evidence does support the view that real allocations do depend on relative prices. He argued that the Japanese had purchased a number of goods, as well as real estate, inside the U.S. Martin Feldstein agreed that relative price movements are impor-

tant to consider but was skeptical of Hall's evidence. The only recorded empirical evidence on this point, is Japanese direct investment, which is relatively small—on the order of $7 billion.

Ueda responded by saying that his model was designed to explain the short-run, and over this horizon relative prices may not be terribly important.